

# ***TOP END<sup>®</sup>***

## ***Everyday and Sport Series***

### ***Wheelchairs***

#### ***Top End Everyday Series***

*Terminator<sup>™</sup> Titanium and Titanium Heavy Duty*

*Terminator<sup>™</sup> Everyday and Everyday Heavy Duty*

#### ***Top End Sports Series***

*Terminator<sup>™</sup> BB*

*X-Terminator<sup>™</sup> BB*

*Paul Schulte Signature BB*

*X-Terminator<sup>™</sup> Titanium*

*X-Terminator<sup>™</sup> QR*

*Transformer<sup>™</sup> All Sport*

*T-5 Tennis Elite*

**DEALER:** This manual **MUST** be given to the user of the wheelchair.

**USER:** BEFORE using this wheelchair, read this manual and save for future reference.

For more information regarding  
Invacare products, parts, and services,  
please visit [www.invacare.com](http://www.invacare.com)



**Yes, you can.™**

---

---

## **WARNING**

**DO NOT OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING THIS MANUAL. IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS AND INSTRUCTIONS, CONTACT YOUR INVACARE DEALER OR INVACARE CUSTOMER SUPPORT BEFORE ATTEMPTING TO USE THIS EQUIPMENT - OTHERWISE INJURY AND/OR EQUIPMENT DAMAGE MAY OCCUR.**

---

*NOTE: Updated versions of this manual are available on [www.invacare.com](http://www.invacare.com).*

# TABLE OF CONTENTS

<b>SPECIAL NOTES .....</b>	<b>6</b>
<b>TYPICAL PRODUCT PARAMETERS .....</b>	<b>8</b>
Tyre Pressure Conversion .....	14
<b>SECTION 1—GENERAL GUIDELINES .....</b>	<b>15</b>
Stability Warning.....	15
Operating Information.....	15
Tyre Pressure and Information .....	17
Weight Training .....	17
Weight Limitation.....	17
<b>SECTION 2—SAFE HANDLING .....</b>	<b>18</b>
Stability and Balance.....	18
Coping with Everyday Obstacles.....	19
A Note to Wheelchair Assistants .....	19
Percentage of Weight Distribution .....	19
Reaching, Leaning and Bending - Forward.....	20
Reaching, Leaning - Backwards .....	20
Tipping.....	21
Tipping - Curbs .....	21
Stairways.....	22
Transferring To and From Other Seats .....	23
<b>SECTION 3—SAFETY INSPECTION .....</b>	<b>24</b>
Safety Inspection Checklist.....	24
Inspect Initially .....	24
Inspect/Adjust Weekly.....	25
Inspect/Adjust Monthly.....	25
Inspect/Adjust Periodically.....	26
Troubleshooting.....	26
Maintenance .....	27
Maintenance Safety Precautions .....	27
Suggested Maintenance Procedures .....	27
<b>SECTION 4—BACK .....</b>	<b>29</b>
Unfolding/Folding the Back.....	29
Back Angle Adjustment .....	29
Removing/Installing Foldover Back Upholstery .....	31
Removing Foldover Back Upholstery .....	31
Installing Foldover Back Upholstery .....	31

# TABLE OF CONTENTS

Adjustable Tension Back Upholstery .....	32
The Adjustable Tension Straps .....	32
The Back Upholstery Cover.....	32
Replacing Adjustable Tension Back Upholstery.....	32
Back Height Adjustment (Adjustable Backs Only).....	33
<b>SECTION 5—WHEELS .....</b>	<b>35</b>
Removing/Installing Rear Wheels .....	35
Adjusting Quick-Release Axles.....	36
Replacing Quad-Release Axles .....	36
Adjusting Quad-Release Handles.....	37
In and/or Out.....	37
Removing Play from Rear Wheels .....	37
Handrim Replacement.....	38
Repairing/Replacing Rear Wheel, Tyre/Tube.....	38
Opening/Closing Camber Clamps .....	39
Adjusting Rear Wheel Camber .....	41
Camber Tube 2000.....	41
A4 Camber System.....	41
Determining Toe In/Toe Out.....	42
Adjusting Toe In/Toe Out .....	43
Camber Tube 2000.....	43
A4 Camber System.....	44
Course Adjustment .....	44
Fine Adjustment .....	45
Adjusting Wheelbase Length (Adjusting Center of Gravity).....	46
Adjusting Wheelbase Width.....	48
Camber Tube 2000.....	48
A4 Camber System.....	48
Replacing Axle Tube .....	49
Adjusting the Axle Tube .....	51
Camber Tube 2000.....	52
A4 Camber System.....	52
Replacing/Adjusting Castors.....	54
Adjusting Front Castor Height.....	55
Wheel Lock Adjustment/Replacement.....	56
<b>SECTION 6—SEAT .....</b>	<b>57</b>
Replacing Adjustable Tension Seat Upholstery .....	57
Replacing Screw-On Seat Upholstery.....	58

# TABLE OF CONTENTS

Adjusting Transformer Seat Height.....	59
Adjusting Front Seat Height .....	59
Adjusting Rear Seat Height.....	59
<b>SECTION 7—FOOTREST/ANTI-TIPPER .....</b>	<b>61</b>
Adjusting/Replacing Standard Footrest.....	61
Replacing the Footrest.....	61
Adjusting the Footrest.....	61
Installing/Adjusting Optional Clamp on Raised Footrest .....	62
Installing.....	62
Adjusting .....	62
Replacing/Adjusting Optional A4 Footrest.....	62
Replacing the Footrest.....	62
Adjusting Footplate Angle.....	63
Adjusting Footplate Depth.....	63
Installing the X-Terminator Footrest.....	63
Adjusting the X-terminator and Transformer Footrests .....	64
Depth .....	64
Angle .....	64
X-Terminator Height.....	64
Transformer Height.....	64
Adjusting/Replacing Anti-Tipper .....	65
Adjusting Anti-tipper .....	66
Replacing Anti-tipper.....	66
Installing/Removing/Adjusting Swivel Anti-Tip .....	67
Installing/Depth Adjustment.....	67
Removing .....	67
Adjusting Height.....	68
All Wheelchairs with Swivel Anti-tip Except	
Paul Schulte Signature BB and T-5 Tennis Elite Models .....	68
Paul Schulte Signature BB and T-5 Tennis Elite Models ONLY .....	68
<b>SECTION 8—SUSPENSION .....</b>	<b>69</b>
Elastomers and Suspension .....	69
Replacing Rear Elastomers .....	69
Replacing Front Elastomers.....	70
<b>SECTION 9—WING/BUMPER .....</b>	<b>72</b>
Installing/Removing the Wing/Bumper .....	72
Installing.....	72
Removing .....	72
<b>NOTES .....</b>	<b>73</b>
<b>LIMITED WARRANTY .....</b>	<b>75</b>

## SPECIAL NOTES

Signal words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage. Refer to the table below for definitions of the signal words.

SIGNAL WORD	MEANING
WARNING	Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage.

WARNING/CAUTION notices as used in this manual apply to hazards or unsafe practices which could result in personal injury or property damage.

---

### NOTICE

**THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.**

Serial number information is located under the seat of the chair.

As a manufacturer of wheelchairs, Invacare endeavors to supply a wide variety of wheelchairs to meet many needs of the end user. However, final selection of the type of wheelchair to be used by an individual rests solely with the user and his/her healthcare professional capable of making such a selection.

Some countries require product returned for service be cleaned and sanitized. Please consult your dealer prior to returning product.

### WHEELCHAIR TIE-DOWN RESTRAINTS AND SEAT POSITIONING STRAPS

Invacare recommends that wheelchair users **NOT** be transported in vehicles of any kind while in wheelchairs. As of this date, the Department of Transportation has not approved any tie-down systems for transportation of a user while in a wheelchair, in a moving vehicle of any type.

It is Invacare's position that users of wheelchairs should be transferred into appropriate seating in vehicles for transportation and use be made of the restraints made available by the auto industry. Invacare cannot and does not recommend any wheelchair transportation systems.

**AS REGARDS RESTRAINTS - SEAT POSITIONING STRAPS - IT IS THE OBLIGATION OF THE DEALER, THERAPISTS AND OTHER HEALTHCARE PROFESSIONALS TO DETERMINE IF A SEATING POSITIONING STRAP IS REQUIRED TO ENSURE THE SAFE OPERATION OF THIS EQUIPMENT BY THE USER. SERIOUS INJURY CAN OCCUR IN THE EVENT OF A FALL FROM A WHEELCHAIR.**

---

---

### **WARNING**

The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt **MUST** be replaced immediately.

---

### **ACCESSORIES WARNING**

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products. Because **TOP END** wheelchairs are made to the specifications of the original owners it is unlikely that refurbished product would be suitable to other user's needs.

---

# TYPICAL PRODUCT PARAMETERS

NOTE: All specifications are approximate.

	TERMINATOR	
	EVERYDAY (ED)	BASKETBALL
<b>FRAME:</b>	Rigid - 4130 Chrome-moly	
<b>SEAT WIDTH:</b>	12-20 inches (30.48 - 50.8 cm) - Outside to Outside of SEAT FRAME in 1-inch (2.54 cm) increments	
<b>SEAT DEPTH:</b>	14 to 17 (35.56 - 43.18 cm) inches	
<b>SEAT-TO-FLOOR:</b>	<b>Front</b> - 17 to 21-inch (43.18 - 53.34 cm), <b>Rear</b> - 14 to 21-inch (35.56 - 53.34 cm)	<b>Front</b> - 17 to 21-inch (43.18 - 53.34 cm), <b>Rear</b> - 13 to 21-inch (33.02 - 53.34 cm)
<b>BACK STYLE:</b>	Fixed (Standard), Fold Down	
<b>BACK HEIGHT</b>		
FIXED:	8 - 16 inches (20.32 - 40.64 cm)	8 - 14 inches (20.32 - 35.56)
ADJUSTABLE:	8 to 11, 10 to 14, 12 to 16, 14 to 18 and 16 to 20 inches in 1-inch increments (20.32 - 27.94, 25.4 - 35.56, 30.48 - 40.64, 35.56 - 45.72, and 40.64 - 50.8 cm in 2.54 cm increments)	
<b>BACK ANGLE</b>		
FOLDING:	90° straight, 4° backward, 4° forward or 8° forward	
FIXED:	0°, 3°, 6° or 9°	
<b>REAR-FRONT CASTOR DISTANCE:</b>	17 to 21 Inches (43.18 - 53.34 cm) (From outside of back of frame to center of front castor housing)	
<b>FRONT CASTOR TO FOOTPLATE DISTANCE:</b>	3 - 5 inches (7.62 - 12.7 cm)	
<b>FOOT WIDTH:</b>	9 - 12 inches (22.86 - 30.48 cm) (Average is 10 inches (25.4 cm) between front of footrest bars)	
<b>FOOTREST:</b>	Tubular: 4-inch (10.16 cm) Height Adjustable (Standard)	
<b>SIDE-WHEEL CLEARANCE:</b>	Adjustable 1/2 to 1-1/2 inches (1.27 - 3.81 cm)	
<b>REAR AXLE:</b>	Adjustable Axle Position, Quick (Standard) or Quad-Release	
<b>REAR WHEEL CAMBER</b>		
CAMBER TUBE 2000:	0°, 3°, 6°, 9°, 12°, 15°, 18°, 20°	
A4™ CAMBER SYSTEM:	0°, 3°, 6°, 9°, 12°	Optional
<b>REAR WHEELS AND TYRES*</b>	Double walled rim high flange hub (Standard), Spinergy® Spox	
22-INCH:	22x1-3/8-inch (55.88x3.5 cm) (Standard)	N/A
24-INCH (STANDARD):	Primo 25-540 (Standard), 24x1-3/8-inch (60.69x3.5 cm), KIK®, Knobby	Primo 25-540 (Standard)
25-INCH:	Primo 25-559 (Standard), KIK, Knobby	Primo 25-559 (Standard)
26-INCH:	Primo 25-590 (Standard), 26x1-3/8-inch (60.96x3.5 cm)	Primo 25-590 (Standard)
700C:	Special Turbo (Standard)	
<b>HANDRIMS:</b>	Aluminum Welded Tab (Standard) Plastic Coated, Natural Fit®, Titanium	Aluminum Welded Tab (Standard), Titanium
<b>WHEEL LOCKS:</b>	High Mount, Low Mount (Standard)	N/A
<b>FRONT FORKS:</b>	Non-Suspension (Standard), Suspension	Non-Suspension
<b>CASTOR SIZE:</b>	3, 4, 5 and 6-inch (7.62, 10.16, 12.7 and 15.24 cm)	3-inch (7.62 cm) Solid
<b>BACK UPHOLSTERY:</b>	U240 Black - Adjustable Tension	
<b>WEIGHT:</b>	20 lbs (9.07 kg)	
<b>SHIPPING WEIGHT:</b>	30 lbs (13.6 kg)	



	TERMINATOR	
	EVERYDAY (ED)	BASKETBALL
<b>WEIGHT LIMITATION:</b>	250 lbs (113.4 kg) 350 lbs (158.76 kg) with Heavy Duty Package	250 lbs (113.4 kg)

NOTE: 15 x 15-inch seat, rear wheels and minimal options are included in the weight.

\*NOTE: Refer to Tyre Pressure Conversion on page 14.

NOTE: All specifications are approximate.

	TERMINATOR TITANIUM	
	EVERYDAY (ED)	BASKETBALL
<b>FRAME:</b>	Rigid - 4130 Chrome-moly	
<b>SEAT WIDTH:</b>	12-20 inches (30.48 - 50.8 cm) - Outside to Outside of SEAT FRAME in 1-inch (2.54 cm) increments	
<b>SEAT DEPTH:</b>	14 to 18 (35.56 - 45.72 cm) inches	
<b>SEAT-TO-FLOOR:</b>	<b>Front</b> - 17 to 21-inch (43.18 - 53.34 cm), <b>Rear</b> - 14 to 21-inch (35.56 - 53.34 cm)	<b>Front</b> - 17 to 21-inch (43.18 - 53.34 cm), <b>Rear</b> - 13 to 21-inch (33.02 - 53.34 cm)
<b>BACK STYLE:</b>	Fixed (Standard), Fold Down	
<b>BACK HEIGHT</b>		
FIXED:	8 - 16 inches (20.32 - 40.64 cm)	8 - 14 inches (20.32 - 35.56 cm)
ADJUSTABLE:	8 to 11, 10 to 14, 12 to 16, 14 to 18 and 16 to 20 inches in 1-inch increments. (20.32 - 27.94, 25.4 - 35.56, 30.48 - 40.64, 35.56 - 45.72, and 40.64 - 50.8 cm in 2.54 cm increments)	
<b>BACK ANGLE</b>		
FOLDING:	90° straight, 4° backward, 4° forward or 8° forward	
FIXED:	0°, 3°, 6° or 9°	
<b>REAR-FRONT CASTOR DISTANCE:</b>	17 to 2 inches (43.18 - 53.34 cm) (From outside of back of frame to center of front castor housing)	
<b>FRONT CASTOR TO FOOTPLATE DISTANCE:</b>	3 to 5 inches (7.62 - 12.7 cm)	
<b>FOOT WIDTH:</b>	9 to 12 inches (22.86 - 30.48 cm) (Average is 10-inches (25.4 cm) between front of footrest bars)	
<b>FOOTREST:</b>	Tubular: 4-inch (10.16 cm) Height Adjustable (Standard)	
<b>SIDE - WHEEL CLEARANCE:</b>	Adjustable 1/2 to 1-1/2-inches (1.27 - 3.81 cm)	
<b>REAR AXLE:</b>	Adjustable Axle Position, Quick (Standard) or Quad-Release	
<b>REAR WHEEL CAMBER</b>		
CAMBER TUBE 2000:	0°, 3°, 6°, 9°, 12°, 15°, 18°, 20°	
A4™ CAMBER SYSTEM:	0°, 3°, 6°, 9°, 12°	
<b>REAR WHEELS AND TYRES*:</b>	Double walled rim high flange hub (Standard), Spinergy® Spox	
22-INCH:	22x1-3/8-inch (55.88x3.5 cm) (Standard)	N/A
24-INCH (STANDARD):	Primo 25-540 (Standard), 24x1-3/8-inch (60.69x3.5 cm), KIK®, Knobby	Primo 25-540 (Standard)
25-INCH:	Primo 25-559 (Standard), KIK, Knobby	Primo 25-559 (Standard)
26-INCH:	Primo 25-590 (Standard), 26x1-3/8-inch (60.69x3.5 cm)	Primo 25-590 (Standard)
700C:	Special Turbo (Standard)	

# TYPICAL PRODUCT PARAMETERS

	TERMINATOR TITANIUM	
	EVERYDAY (ED)	BASKETBALL
<b>HANDRIMS:</b>	Aluminum Welded Tab (Standard) Plastic Coated, Natural Fit®, Titanium	Aluminum Welded Tab (Standard), Titanium
<b>WHEEL LOCKS:</b>	High Mount, Low Mount (Standard)	N/A
<b>FRONT FORKS:</b>	Non-Suspension (Standard), Suspension	Non-Suspension
<b>CASTOR SIZE:</b>	3, 4, 5 and 6-inch (7.62, 10.16, 12.7 and 15.24 cm)	3-inch (7.62 cm) Solid
<b>BACK UPHOLSTERY:</b>	U240 Black - Adjustable Tension	
<b>WEIGHT:</b>	17 lbs (7.71 kg)	
<b>SHIPPING WEIGHT:</b>	30 lbs (13.6 kg)	
<b>WEIGHT LIMITATION:</b>	250 lbs (113.4 kg) 400 lbs (181.44 kg) with Heavy Duty Package	250 lbs (113.4 kg)

NOTE: 15 x 15-inch seat, rear wheels and minimal options are included in the weight.

\*NOTE: Refer to Tyre Pressure Conversion on page 14.

NOTE: All specifications are approximate.

	X-TERMINATOR	
	BASKETBALL (BB) AND QUAD RUGBY	TITANIUM
<b>FRAME:</b>	Rigid - 4130 Chrome-moly	Rigid - 3-2.5 Titanium
<b>SEAT WIDTH:</b>	12-20 inches (30.48 - 50.8 cm) - Outside to Outside of SEAT FRAME in 1-inch (2.54 cm) increments	
<b>SEAT DEPTH:</b>	14 to 17 (35.56 - 43.18 cm) inches	
<b>SEAT-TO-FLOOR:</b>	<b>Front</b> - 17 to 21-inch (43.18 - 53.34 cm), <b>Rear</b> - 13 to 21-inch (33.02 - 53.34 cm)	
<b>BACK STYLE:</b>	Fixed (Standard), Fold Down	
<b>BACK HEIGHT</b>		
FIXED:	8 to 14 inches (35.56 - 45.72 cm)	
ADJUSTABLE:	8 to 11, 10 to 14, 12 to 16, 14 to 18 and 16 to 20 inches in 1-inch increments. (20.32 - 27.94, 25.4 - 35.56, 30.48 - 40.64, 35.56 - 45.72, and 40.64 - 50.8 cm in 2.54 cm increments)	
<b>BACK ANGLE</b>		
FOLDING:	90° straight, 4° backward, 4° forward or 8° forward	
FIXED:	0°, 3°, 6° or 9°	
<b>REAR-FRONT CASTOR DISTANCE:</b>	22, 24, and 26 inches (55.88, 60.96, 66.04) (From outside of back of frame to center of front castor housing)	
<b>FOOT WIDTH:</b>	9 to 12-inches (22.86 - 30.48 cm) (Average is 10-inches (25.4 cm) between front of footrest bars)	
<b>FOOTREST:</b>	Tubular: 4-inch (10.16 cm) Height Adjustable (Standard)	
<b>SIDE - WHEEL CLEARANCE:</b>	Adjustable 1/2 to 1-1/2 inches (1.27 - 3.81 cm)	
<b>REAR AXLE:</b>	Adjustable Axle Position, Quick (Standard) or Quad-Release	
<b>REAR WHEEL CAMBER</b>		
CAMBER TUBE 2000:	0°, 3°, 6°, 9°, 12°, 15°, 18°, 20°	
A4™ CAMBER SYSTEM:	N/A	
<b>REAR WHEELS AND TYRES*:</b>	Double walled rim high flange hub (Standard), Spinergy® Spox	
24-INCH (STANDARD):	Primo 25-540	

	X-TERMINATOR BASKETBALL (BB) TITANIUM AND QUAD RUGBY	
25-INCH:	Primo 25-559 (Standard)	
26-INCH:	Primo 25-590 (Standard)	
700C:	Special Turbo (Standard)	
<b>HANDRIMS:</b>	Aluminum Welded Tab, Titanium	
<b>WHEEL LOCKS:</b>	High Mount, Low Mount (Standard)	N/A
<b>FRONT FORKS:</b>	Non-Suspension	
<b>CASTOR SIZE:</b>	3-inch (7.62 cm) Solid	
<b>BACK UPHOLSTERY:</b>	U240 Black - Adjustable Tension	
<b>WEIGHT:</b>	23 lbs (10.44 kg)	
<b>SHIPPING WEIGHT:</b>	30 lbs (13.6 kg)	
<b>WEIGHT LIMITATION:</b>	250 lbs (113.4 kg)	

NOTE: 15 x 15-inch seat, rear wheels and minimal options are included in the weight.

\*NOTE: Refer to Tyre Pressure Conversion on page 14.

NOTE: All specifications are approximate.

	PAUL SCHULTE SIGNATURE BB/ T-5 TENNIS ELITE	
<b>FRAME:</b>	Rigid - 6061T6 Aluminum or 3-2.5 Titanium	
<b>SEAT WIDTH:</b>	12-19 inches (30.48 - 48.26 cm) - Outside to Outside of SEAT FRAME in 1-inch (2.53 cm) increments	
<b>SEAT DEPTH:</b>	14 to 18-inches (35.56 - 45.72 cm)	
<b>SEAT-TO-FLOOR:</b>	<b>Front</b> - 17 to 21-inch (43.18 - 53.34 cm), <b>Rear</b> - 13 to 21-inch (33.02 - 53.34 cm)	
<b>BACK STYLE:</b>	Fixed	
<b>BACK HEIGHT</b>		
FIXED:	8 to 14 inches (35.56 - 45.72 cm)	
ADJUSTABLE:	11 to 14, 14 to 18, 16 to 20 inches in 1-inch increments. (27.94 to 35.56, 35.56 to 45.72, 40.64 to 50.8 cm in 2.54 cm increments)	
<b>BACK ANGLE:</b>	Fixed 0° (Set at 90° to floor)	
<b>WHEELBASE:</b>	16, 17, 18, or 19 inches (40.64, 43.18, 45.72, or 48.26 cm)	
<b>FOOTREST:</b>	Tubular: 4-inch (10.16 cm) Height Adjustment	
<b>SIDE - WHEEL CLEARANCE:</b>	Adjustable 1/2 to 1-1/2 inches (1.27 - 3.81 cm)	
<b>REAR AXLE:</b>	Fixed Axle Position, Quick Release (Standard)	
<b>REAR WHEEL CAMBER:</b>	Fixed: 12°, 15°, 18° or 20°	
<b>REAR WHEELS*:</b>		
24-INCH (STANDARD):	Double Walled Rim High Flange Hub (Standard), Cross Spoke, Spinergy® Spox (Optional)	
25-INCH:		
26-INCH:		
700C:		
<b>HANDRIMS:</b>	Aluminum Welded Tab (Standard), Titanium (Optional)	
<b>WHEEL LOCKS:</b>	N/A	
<b>FRONT FORKS:</b>	Fits 3-inch (7.62 cm) Wheel Non-Suspension (Standard)	
<b>CASTOR SIZE:</b>	3-inch (7.62 cm) Solid (Standard), Lighted (Optional)	
<b>BACK UPHOLSTERY:</b>	U240 Black - Adjustable Tension	
<b>WEIGHT:</b>	22 lbs (9.98 kg) (Aluminium), 20 lbs (9.07 kg) (Titanium)	

## TYPICAL PRODUCT PARAMETERS

---

	PAUL SCHULTE SIGNATURE BB/ T-5 TENNIS ELITE
<b>SHIPPING WEIGHT:</b>	30 lbs (13.6 kg)
<b>WEIGHT LIMITATION:</b>	250 lbs (113.4 kg)

*NOTE: 15 x 15-inch seat, rear wheels and minimal options are included in the weight.*

*\*NOTE: Refer to Tyre Pressure Conversion on page 14.*

*NOTE: All specifications are approximate.*

	TRANSFORMER ALL-SPORT
<b>FRAME:</b>	Rigid - 6061T6 Aluminium
<b>SEAT WIDTH:</b>	12-20 inches (30.48 - 50.8 cm) - Outside to Outside of SEAT FRAME in 1-inch increments
<b>SEAT DEPTH:</b>	12 to 20-inches (30.48 - 50.8 cm)
<b>SEAT-TO-FLOOR:</b>	
TALL FRAME:	<b>Front</b> - 18 to 21-inch (45.72 - 53.34 cm), <b>Rear</b> - 15 to 21-inch (38.1 - 53.34 cm)
SHORT FRAME:	<b>Front</b> - 16 to 18-inch (40.64 - 45.72 cm), <b>Rear</b> - 15 to 18-inch (38.1 - 45.72 cm)
<b>BACK STYLE:</b>	Fixed, Fold Down
<b>BACK HEIGHT:</b>	
FIXED:	8 to 14 inches (20.32 - 45.72 cm)
ADJUSTABLE:	8 to 11, 10 to 14, 12 to 16 and 14 to 18 in 1-inch increments. (20.32 to 27.94, 25.4 to 35.56, 30.48 to 40.6, 35.56 to 45.72 cm in 2.54 cm increments)
<b>BACK ANGLE:</b>	Fixed 0° (Set at 90° to floor)
FOLDING:	Adjustable in 5° increments
FIXED:	Set at 90° to floor
<b>FRAME LENGTH:</b>	
FRAME W/FOLDING BACK:	Seat depth plus 10 inches (25.4 cm)
FRAME W/FIXED BACK:	Seat depth plus 8 inches (20.32 cm)
<b>FOOTREST:</b>	Recessed: 4-inch (10.16 cm) Height/Angle Adjustable, Solid Platform (Standard)
<b>SIDE - WHEEL CLEARANCE:</b>	Adjustable 1/2 to 1-1/2 inches (1.27 - 3.81 cm)
<b>REAR AXLE:</b>	Adjustable Axle Position, Quick-Release
<b>REAR WHEEL CAMBER:</b>	Fixed: 12°, 15°, 18° or 20°
CAMBER TUBE 2000:	0°, 3°, 6°, 12°, 15°, 18°, 20°
A4 CAMBER SYSTEM:	Optional
<b>REAR WHEELS*:</b>	Double walled rim high flange hub (standard), Spinergy® Spox (optional)
24-INCH (STANDARD):	Primo 25-540, Continental (Optional)
25-INCH:	Primo 25-559 (Standard)
26-INCH:	Primo 25-590 (Standard)
700C:	Special Turbo (Standard)
<b>HANDRIMS:</b>	Aluminum Welded Tab (Standard)
<b>WHEEL LOCKS:</b>	N/A
<b>FRONT FORKS:</b>	Non-Suspension (Standard)
<b>CASTOR SIZE:</b>	3-inch (7.62 cm)
<b>BACK UPHOLSTERY:</b>	U240 Black - Foldover
<b>WEIGHT:</b>	20 lbs. (9.07 kg)
<b>SHIPPING WEIGHT:</b>	30 lbs. (13.6 kg)
<b>WEIGHT LIMITATION:</b>	250 lbs. (113.40 kg)

NOTE: 15 x 15-inch seat, rear wheels and minimal options are included in the weight.

\*NOTE: Refer to Tyre Pressure Conversion on page 14.

## Tyre Pressure Conversion

*NOTE: PSI rating is printed on the side of the tyre.*

*NOTE: Conversion formula: 1 psi = 6.895 kPa (approx. 7 kPa).*

PSI	KILOPASCALS
50	345
55	379
60	414
65	448
70	483
75	517
80	552
85	586
90	621
95	655
100	690
105	724
110	758
115	793
120	827

# SECTION I—GENERAL GUIDELINES

## ⚠ WARNING

**SECTION I - GENERAL GUIDELINES** contains important information for the safe operation and use of this product. **DO NOT** use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as **Owner's Manuals, Service Manuals or Instruction Sheets** supplied with this product or optional equipment. If you are unable to understand the **Warnings, Cautions or Instructions**, contact a healthcare professional, dealer or technical personnel before attempting to use this equipment - otherwise, injury or damage may occur.

## Stability Warning

The position of the footrest, camber tube, back angle, the tautness of the back upholstery as well as the user's condition are directly related to the wheelchairs stability. Any change to one or any combination of the five may cause the wheelchair to decrease in stability. Use extreme caution when using a new seating position. The addition of anti-tippers may be required.

	FOOTREST POSITION	CAMBER TUBE	BACK ANGLE	BACK UPHOLSTERY	USER CONDITION
FOOTREST POSITION	●		✓		✓
CAMBER TUBE		●	✓		✓
BACK ANGLE	✓		●	✓	✓
BACK UPHOLSTERY			✓	●	✓
USER CONDITION	✓	✓	✓	✓	●

*NOTE: When changes to the left hand column occur, follow across the chart and refer to the ✓ procedure to maintain the proper stability, safety and handling of the racing chair.*

## Operating Information

To determine and establish your particular safety limits, practice bending, reaching and transferring activities in several combinations in the presence of a qualified healthcare professional before attempting active use of the wheelchair.

**DO NOT** attempt to reach objects if you have to move forward in the seat.

DO NOT attempt to reach objects if you have to pick them up from the floor by reaching down between your knees.

DO NOT lean over the top of the back upholstery to reach objects from behind as this may cause the wheelchair to tip over.

DO NOT shift your weight or sitting position toward the direction you are reaching as the wheelchair may tip over.

DO NOT tip the wheelchair without assistance.

DO NOT use an escalator to move a wheelchair between floors. Serious bodily injury may occur. Before attempting to transfer in or out of the wheelchair, every precaution should be taken to reduce the gap distance. Turn both castors parallel to the object you are transferring onto. Also be certain the wheel locks are engaged to prevent the wheels from moving.

DO NOT operate on roads, streets or highways.

DO NOT climb, go up or down ramps or traverse slopes greater than 9°.

DO NOT attempt to move up or down an incline with a water, ice or oil film.

DO NOT attempt to ride over curbs or obstacles. Doing so may cause your wheelchair to turn over and cause bodily harm or damage to the wheelchair.

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

Because TOP END wheelchairs are made to the specifications of the original owners it is unlikely that refurbished product would be suitable to other user's needs.

DO NOT attempt to lift the wheelchair by any removable (detachable) parts. Lifting by means of any removable (detachable) parts of a wheelchair may result in injury to the user or damage to the wheelchair.

DO NOT stand on the frame of the wheelchair.

Check all allen screws that secure the footrest/raised footrest system to the chair frame before using the wheelchair, especially if engaging in any contact sport.

Anti-tippers MUST BE attached at all times. Inasmuch as the anti-tippers are an option on this wheelchair (you may order with or without the anti-tippers), Invacare strongly recommends ordering the anti-tippers as an additional safeguard for the wheelchair user.

Anti-tippers MUST be used at all times. When outdoors on wet, soft ground or on gravel surfaces, anti-tippers may not provide the same level of protection against tip over. Extra caution MUST be observed when traversing such surfaces.

Unless otherwise noted, all service and adjustments should be performed while the wheelchair is unoccupied.

ALWAYS wear your seat positioning strap. Inasmuch as the SEAT POSITIONING STRAP is an option on this wheelchair (You may order with or without the seat positioning strap), Invacare Top End strongly recommends ordering the seat positioning strap as an additional safeguard for the wheelchair user.



The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt **MUST** be replaced immediately.

**ALWAYS** use the handrims for self-propulsion. Inasmuch as the handrims are an option on this wheelchair (you may order with or without the handrims), Invacare strongly recommends ordering the handrims as an additional safeguard for the wheelchair user.

**DO NOT** use the footplate as a platform when getting in or out of the wheelchair.

The bumper design creates a potential foot entrapment area. Ensure the occupant's legs and feet are properly secured during use. When transferring the occupant, ensure the feet do not slip between the bumper and the footrests.

## Tyre Pressure and Information

**DO NOT** use your wheelchair unless it has the proper tyre pressure (p.s.i.). **DO NOT** overinflate the tyres. Failure to follow these suggestions may cause the tyre to explode and cause bodily harm. The recommended tyre pressure is on the sidewall of the tyre.

Replacement of the tyre or tube **MUST** be performed by a qualified technician.

## Weight Training

Invacare **DOES NOT** recommend the use of its wheelchairs as a weight training apparatus. Invacare wheelchairs have not been designed or tested as a seat for any kind of weight training. If occupant uses said wheelchair as a weight training apparatus, Invacare shall not be liable for bodily injury and the warranty is void.

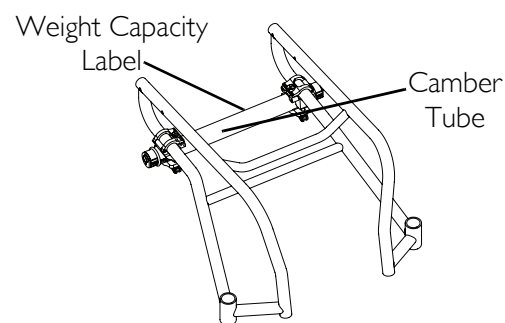
## Weight Limitation

Invacare's Top End Everyday and Sport Series wheelchairs (Terminator Titanium, Terminator Everyday, Terminator BB, X-Terminator BB, Paul Schulte Signature BB, T-5 Tennis Elite, X-Terminator titanium, X-terminator Quad Rugby QR and Transformer All Sport) have a weight limitation of 250 lbs (113.4 kg).

Terminator Everyday wheelchairs with the heavy duty option have a weight limitation of 350 lbs (158.76 kg).

Terminator Titanium wheelchairs with the heavy duty option have a weight limitation of 400 lbs (181.44 kg).

A weight limitation label is on the camber tube of the chair.



**FIGURE I.1** Weight Capacity Label

## SECTION 2—SAFE HANDLING

“Safety and Handling” of the wheelchair requires the close attention of the wheelchair user as well as the assistant. This manual points out the most common procedures and techniques involved in the safe operation and maintenance of the wheelchair. It is important to practice and master these safe techniques until you are comfortable in manoeuvring around the frequently encountered architectural barriers.

Use this information only as a “basic” guide. The techniques that are discussed on the following pages have been used successfully by many.

Individual wheelchair users often develop skills to deal with daily living activities that may differ from those described in this manual. Invacare recognizes and encourages each individual to try what works best for him/her in overcoming architectural obstacles that they may encounter, however, ALL WARNINGS and CAUTIONS given in this manual **MUST** be followed. Techniques in this manual are a starting point for the new wheelchair user and assistant with “safety” as the most important consideration for all.

### Stability and Balance

---

#### **WARNING**

**ALWAYS** wear your seat positioning strap. Inasmuch as the **SEAT POSITIONING STRAP** is an option on this wheelchair (you may order with or without the seat positioning strap), Invacare strongly recommends ordering the seat positioning strap as an additional safeguard for the wheelchair user.

The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt **MUST** be replaced immediately.

**Anti-tippers MUST BE** attached at all times. Inasmuch as the anti-tippers are an option on this wheelchair (you may order with or without the anti-tippers), Invacare strongly recommends ordering the anti-tippers as an additional safeguard for the wheelchair user.

---

To assure stability and proper operation of your wheelchair, you must at all times maintain proper balance. Your wheelchair has been designed to remain upright and stable during normal daily activities as long as you do not move beyond the center of gravity.

Virtually all activities which involve movement in the wheelchair have an effect on the center of gravity. Invacare recommends using seat positioning straps for additional safety while involved in activities that shift your weight.

DO NOT lean forward out of the wheelchair any further than stability will allow. Make sure castors are pointing in the forward position whenever you lean forward. This can be achieved by advancing the wheelchair and then reversing it in a straight line.

## Coping with Everyday Obstacles

Coping with the irritation of everyday obstacles can be alleviated somewhat by learning how to manage your wheelchair. Keep in mind your center of gravity to maintain stability and balance.

### A Note to Wheelchair Assistants

When assistance to the wheelchair user is required, remember to use good body mechanics. Keep your back straight and bend your knees whenever tilting the wheelchair or traversing curbs, or other impediments.

---

#### **⚠ WARNING**

**DO NOT attempt to lift a wheelchair by lifting on any removable (detachable) parts. Lifting by means of any removable (detachable) parts of a wheelchair may result in injury to the user or damage to the wheelchair.**

---

Also, be aware of any removable (detachable) parts. These must NEVER be used to move the wheelchair or as lifting supports, as they may be inadvertently released, resulting in possible injury to the user and/or assistant(s).

When learning a new assistance technique, have an experienced assistant help you before attempting it alone.

## Percentage of Weight Distribution

---

#### **⚠ WARNING**

**DO NOT attempt to reach objects if you have to move forward in the seat or pick them up from the floor by reaching down between your knees.**

**The position of the footrest, camber tube, back angle, the tautness of the back upholstery as well as the user's condition are directly related to the wheelchair's stability. Any change to one or any combination of the five may cause the wheelchair to decrease in stability. Use EXTREME caution when using a new seating position. The addition of anti-tippers may be required.**

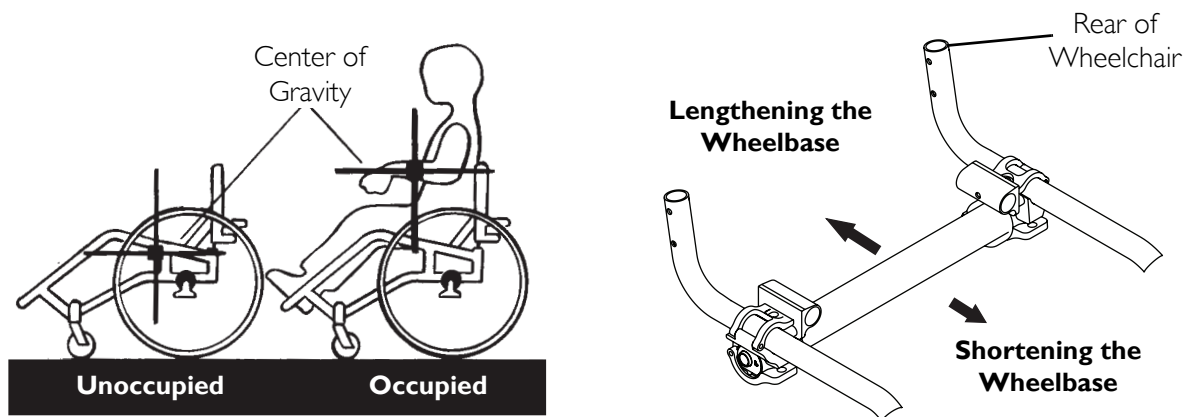
---

Many activities require the wheelchair owner to reach, bend and transfer in and out of the wheelchair. These movements will cause a change to the normal balance, the center of gravity, and the weight distribution of the wheelchair.

To determine and establish your particular safety limits, practice bending, reaching and transferring activities in several combinations in the presence of a qualified health-care professional before attempting active use of wheelchair.

Proper positioning is essential for your safety. When reaching, leaning, bending forward, it is important to use the front castors as a tool to maintain stability and balance.

- Lengthening the wheelbase will increase the stability and maintain standard manoeuvrability of wheelchair.
- Shortening the wheelbase will decrease the stability, increase the manoeuvrability and distribute additional weight onto the rear wheels.

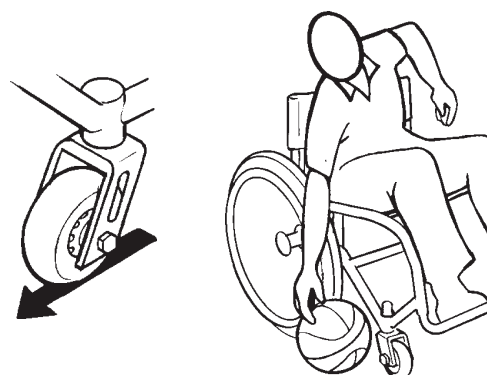


### Reaching, Leaning and Bending - Forward

Position the front castors so that they are extended as far forward as possible and engage wheel locks.

#### **⚠ WARNING**

**DO NOT** attempt to reach objects if you have to move forward in the seat or pick them up from the floor by reaching down between your knees.



Reaching, Leaning, and Bending - Forward

### Reaching, Leaning - Backwards

#### **⚠ WARNING**

**DO NOT** lean over the top of the back upholstery. This will change your center of gravity and may cause you to tip over.



Reaching, Leaning, and Bending - Backwards

---

## Tipping

---

### **WARNING**

**DO NOT** tip the wheelchair without assistance.

**DO NOT** let the wheelchair drop the last few inches to the ground. This could result in injury to the occupant.

---

When tipping the wheelchair, an assistant should grasp the back of the wheelchair on a non-removable (non-detachable) part. Inform the wheelchair occupant before tilting the wheelchair and remind him/her to lean back. Be sure the occupant's feet and hands are clear of all wheels and/or pinch points. Apply a continuous motion until the balance point is achieved. At this point, the assistant will feel a difference in the weight distribution. Turn the wheelchair in the desired direction if necessary. Slowly lower the wheelchair in one continuous movement.

---

## Tipping - Curbs

---

### **WARNING**

**Invacare does not recommend that sport wheelchairs be used where traversing curbs present an obstacle. Possible injury to occupant and/or assistant(s) can occur. Transfer to an everyday use wheelchair is recommended if any such obstacles may be encountered.**

---

After mastering the techniques of tipping the wheelchair, use the following method to tackle curbs, short stairs, etc.

Turn the anti-tippers, if equipped, so the wheels are facing up. Unless the first assistant has exceptional upper body strength, it is recommended that two assistants perform this operation. The second assistant should be positioned at the front of the wheelchair lifting upward on a non-removable (non-detachable) part of the wheelchair frame when lifting the wheelchair and stabilizing the wheelchair when the wheelchair is being lowered to the ground.

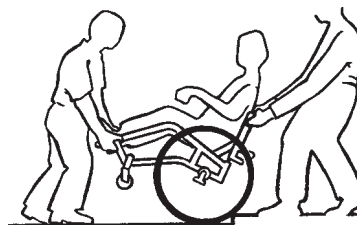
The first assistant should stand on the sidewalk and turn the wheelchair so that the rear wheels are against the curb. The wheelchair should be tilted back to the balance point and, in one continuous upward movement, the rear wheels should be pulled up and over the curb. **DO NOT** return the front castors to the ground until the wheelchair has been pulled backward far enough for the front castors to clear the edge of the curb.

### **⚠ WARNING**

**When lowering the front castors of the wheelchair, DO NOT let the wheelchair drop the last few inches to the ground. This could result in injury to the occupant and/or damage to the wheelchair.**

---

Roll the wheelchair backward and slowly lower the wheelchair in one continuous movement. DO NOT let the wheelchair drop the last few inches to the ground. This could result in injury to the occupant. Turn the anti-tippers so the wheels are facing down.



## **Stairways**

---

### **⚠ WARNING**

**Concerning stairway access: Invacare does not recommend that wheelchairs be transported up or down stairways with occupant in the wheelchair. Possible injury to occupant and/or assistant(s) can occur. Transfer to an everyday use wheelchair is recommended.**

**DO NOT attempt to lift the wheelchair by any removable (detachable) parts. Lifting by means of any removable (detachable) parts of a wheelchair may result in injury to the user or damage to the wheelchair.**

**Extreme caution is advised when it is necessary to move an occupied wheelchair up or down a stairway. Invacare recommends that, if possible, the user be removed from the wheelchair prior to moving. Invacare recommends using two assistants and making thorough preparations. Make sure to use ONLY secure, non-detachable parts for hand-held supports.**

---

Follow this procedure for moving the wheelchair between floors when an elevator is NOT available:

1. If equipped, turn the anti-tippers up. Refer to [Footrest/Anti-Tipper](#) on page 61.
2. After the wheelchair has been tilted back to the balance point, one assistant (in the rear) backs the wheelchair up against the first step, while securely grasping a non-removable (non-detachable) part of the wheelchair for leverage.

3. The second assistant, with a firm hold on a non-detachable part of the framework, lifts the wheelchair up and over the stair and steadies it as the first assistant places one foot on the next stair and repeats procedure.
4. The wheelchair should not be lowered until the last stair has been negotiated and it has been rolled away from the stairway.
5. If equipped, turn the anti-tippers down. Refer to Footrest/Anti-Tipper on page 61 in this manual.

---

### **⚠ WARNING**

**DO NOT** use an escalator to move a wheelchair between floors. Serious bodily injury may occur.

---

## **Transferring To and From Other Seats**

---

### **⚠ WARNING**

**Before attempting to transfer in or out of the wheelchair, every precaution should be taken to reduce the gap distance. Turn both castors parallel to the object you are transferring onto. Also be certain the wheel locks are engaged to help prevent the wheels from moving.**

**When transferring, position yourself as far back as possible in the seat. This will prevent damaged upholstery and the possibility of the wheelchair tipping forward.**

---

*NOTE: This activity may be performed independently provided you have adequate mobility and upper body strength.*

Position the wheelchair as close as possible along side the seat to which you are transferring, with the front castors parallel to it. Remove the armrest, if installed. Engage wheel locks. Shift body weight into seat with transfer.

During independent transfer, little or no seat platform will be beneath you. Use a transfer board if at all possible.



## SECTION 3—SAFETY INSPECTION

*NOTE: Every six months, take your wheelchair to a qualified technician for a thorough inspection and servicing. Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your wheelchair. To operate properly and safely, your wheelchair must be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your wheelchair. Clean upholstery with mild soap and water or spray disinfectant using a sponge. DO NOT use bleach or wash in a washing machine.*

### Safety Inspection Checklist

---

#### **WARNING**

**In cases of inactivity longer than six months, a comprehensive initial inspection MUST be performed.**

---

Initial adjustments should be made to suit your personal body structure and preference. Thereafter follow these maintenance procedures:

#### **Inspect Initially**

- ☐ Ensure wheelchair rolls straight (no excessive drag/pull to one side).
- ☐ Ensure wheel locks DO NOT interfere with tyres when rolling.
- ☐ Ensure pivot points are free of wear and looseness.
- ☐ Ensure wheel locks are easy to engage.
- ☐ Inspect seat and back upholstery for rips or sagging.
- ☐ Inspect upholstery fastening flaps to ensure they securely latch.
- ☐ Inspect seat positioning strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.
- ☐ Ensure hand grips (if equipped) are not loose.
- ☐ Ensure quick release axles and camber inserts are clean.
- ☐ Ensure adjustable axle position camber bar is securely tightened.
- ☐ Ensure quick/quad release axles lock properly.
- ☐ Ensure no excessive side movement or binding when lifted and spun.
- ☐ Inspect handrims for signs of rough edges or peeling.
- ☐ Inspect spokes for bent or broken spokes.
- ☐ Ensure all spokes are uniformly tight.
- ☐ Clean upholstery and armrests.



---

**CAUTION**

**As with any vehicle, the wheels and tyres should be checked periodically for cracks and wear, and should be replaced if damaged.**

---

- ☐ Inspect wheel/fork assembly for proper tension by spinning castor; castor should come to a gradual stop.
- ☐ Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
- ☐ Ensure wheel bearings are clean and free of moisture.
- ☐ Inspect tyres for flat spots and wear.
- ☐ If pneumatic tyres check for proper inflation.
- ☐ Ensure castors are free of debris.
- ☐ Check that all labels are present and legible. Replace if necessary.

**Inspect/Adjust Weekly**

- ☐ Ensure hand grips (if equipped) are not loose.
  - ☐ Ensure quick release axles and camber inserts are clean.
  - ☐ Ensure quick/quad release axles lock properly.
  - ☐ Inspect handrims for signs of rough edges or peeling.
  - ☐ Inspect spokes for bent or broken spokes.
  - ☐ Ensure All spokes uniformly tight.
- 

**CAUTION**

**As with any vehicle, the wheels and tyres should be checked periodically for cracks and wear, and should be replaced if damaged.**

---

- ☐ Inspect wheel/fork assembly for proper tension by spinning castor; castor should come to a gradual stop.
- ☐ Inspect tyres for flat spots and wear.
- ☐ If pneumatic tyres check for proper inflation.
- ☐ Ensure castors are free of debris.

**Inspect/Adjust Monthly**

- ☐ Ensure wheel locks DO NOT interfere with tyres when rolling.
- ☐ Ensure pivot points are free of wear and looseness.
- ☐ Inspect upholstery fastening flaps to ensure they securely latch.
- ☐ Inspect seat positioning strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.

- ☐ Ensure adjustable axle position camber bar is securely tightened.
- 

### **CAUTION**

**As with any vehicle, the wheels and tyres should be checked periodically for cracks and wear, and should be replaced if damaged.**

---

- ☐ Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
- ☐ Ensure wheel bearings are clean and free of moisture.
- ☐ Ensure castors are free of debris.

### **Inspect/Adjust Periodically**

- ☐ Ensure wheelchair rolls straight (no excessive drag/pull to one side).
  - ☐ Ensure wheel locks are easy to engage.
  - ☐ Inspect seat and back upholstery for rips or sagging.
  - ☐ Ensure adjustable axle position camber bar is securely tightened.
  - ☐ Ensure no excessive side movement or binding when lifted and spun.
  - ☐ Inspect handrims for signs of rough edges or peeling.
  - ☐ Clean upholstery and armrests.
- 

### **CAUTION**

**As with any vehicle, the wheels and tyres should be checked periodically for cracks and wear, and should be replaced if damaged.**

---

- ☐ Ensure wheel bearings are clean and free of moisture.
- ☐ Ensure castors are free of debris.
- ☐ Check that all labels are present and legible. Replace if necessary.

## **Troubleshooting**

CHAIR VEERS RIGHT	CHAIR VEERS LEFT	SLUGGISH TURN OR PERFORMANCE	CASTOR FLUTTERS	SQUEAKS AND RATTLES	LOOSE- NESS IN CHAIR	SOLUTIONS
X	X	X	X			Check tyres for correct and equal pressure.
		X	X	X	X	Check for loose stem nuts.
				X	X	Check spokes and nipples.
X	X		X			Check that both castors contact the ground at the same time.

# Maintenance

## Maintenance Safety Precautions

### **⚠ WARNING**

**After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.**

### **CAUTION**

**DO NOT** overtighten hardware attaching to the frame. This could cause damage to the frame tubing.

## Suggested Maintenance Procedures

1. Before using your wheelchair, make sure all nuts and bolts are tight. Check all parts for damage or wear and replace. Check all parts for proper adjustment.
2. Keep quick/quad-release axles free of dirt and lint to ensure positive locking and proper operation. Refer to Adjusting Quick-Release Axles on page 36 or Adjusting Quad-Release Handles on page 37.

### **⚠ WARNING**

**DO NOT** use **WD-40®**, **3-in-1 oil®**, or other penetrating lubricants on quick-release axles or camber inserts. Otherwise, binding and/or damage to the wheelchair may occur.

3. Clean quick-release axles and camber inserts once a week with a Teflon® lubricant.

### **⚠ WARNING**

**DO NOT** use your wheelchair unless it has the proper tyre pressure (p.s.i.).

**DO NOT** overinflate the tyres. Failure to follow these suggestions may cause the tyre to explode and cause bodily harm. The recommended tyre pressure is on the sidewall of the tyre.

4. Recommended tyre pressure is listed on the sidewall of the tyre.

*NOTE: Refer to Tyre Pressure Conversion on page 14 for correct metric measurement.*

### **CAUTION**

**As with any vehicle, the wheels and tyres should be checked periodically for cracks and wear, and should be replaced if damaged.**

5. The wheels, castors and tyres should be checked periodically for cracks and wear, and should be replaced when necessary. Contact a qualified technician or Invacare customer support at the telephone numbers on the back of this manual.

6. Regularly check for loose spokes in the rear wheels. If loose, have them adjusted. Contact a qualified technician or Invacare customer support at the telephone numbers on the back of this manual.
7. Periodically check handrims to ensure they are secured to the rear wheels. Refer to Handrim Replacement on page 38.
8. Periodically adjust wheel locks as tyres wear. Refer to Wheel Lock Adjustment/Replacement on page 56.
9. Periodically check castor wheel bearings to make sure they are clean and free from moisture. Use a Teflon<sup>®</sup> lubricant if necessary.
10. Check upholstery for sagging, rips or tears.
11. Clean upholstery with mild soap and water.

*NOTE: Some countries require product returned for service be cleaned and sanitized. Please consult your dealer prior to returning product.*

## SECTION 4—BACK

### ⚠ WARNING

**ALWAYS** perform these procedures in the presence of an assistant. The position of the footrest, camber tube, back angle, the tautness of the back upholstery as well as the user's condition are directly related to the wheelchairs stability. Any change to one or any combination of the five may cause the wheelchair to decrease in stability. Use extreme caution when using a new seating position. The addition of anti-tippers may be required.

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

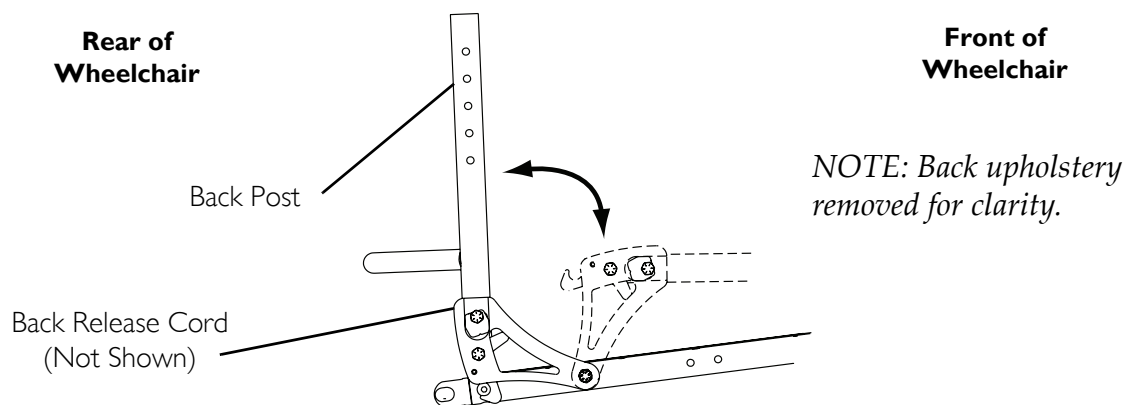
## Unfolding/Folding the Back

### ⚠ WARNING

**Back MUST** be locked securely in place before using the wheelchair.

*NOTE: For this procedure, refer to FIGURE 4.1*

1. To unfold the back, lift up on the back posts and pull back towards the rear of the wheelchair until it locks into place.
2. To fold the back, pull up on the back release cord and push the back posts forward toward the front of the wheelchair.



**FIGURE 4.1** Unfolding/Folding the Back

## Back Angle Adjustment

*NOTE: For this procedure, refer to FIGURE 4.2 on page 30.*

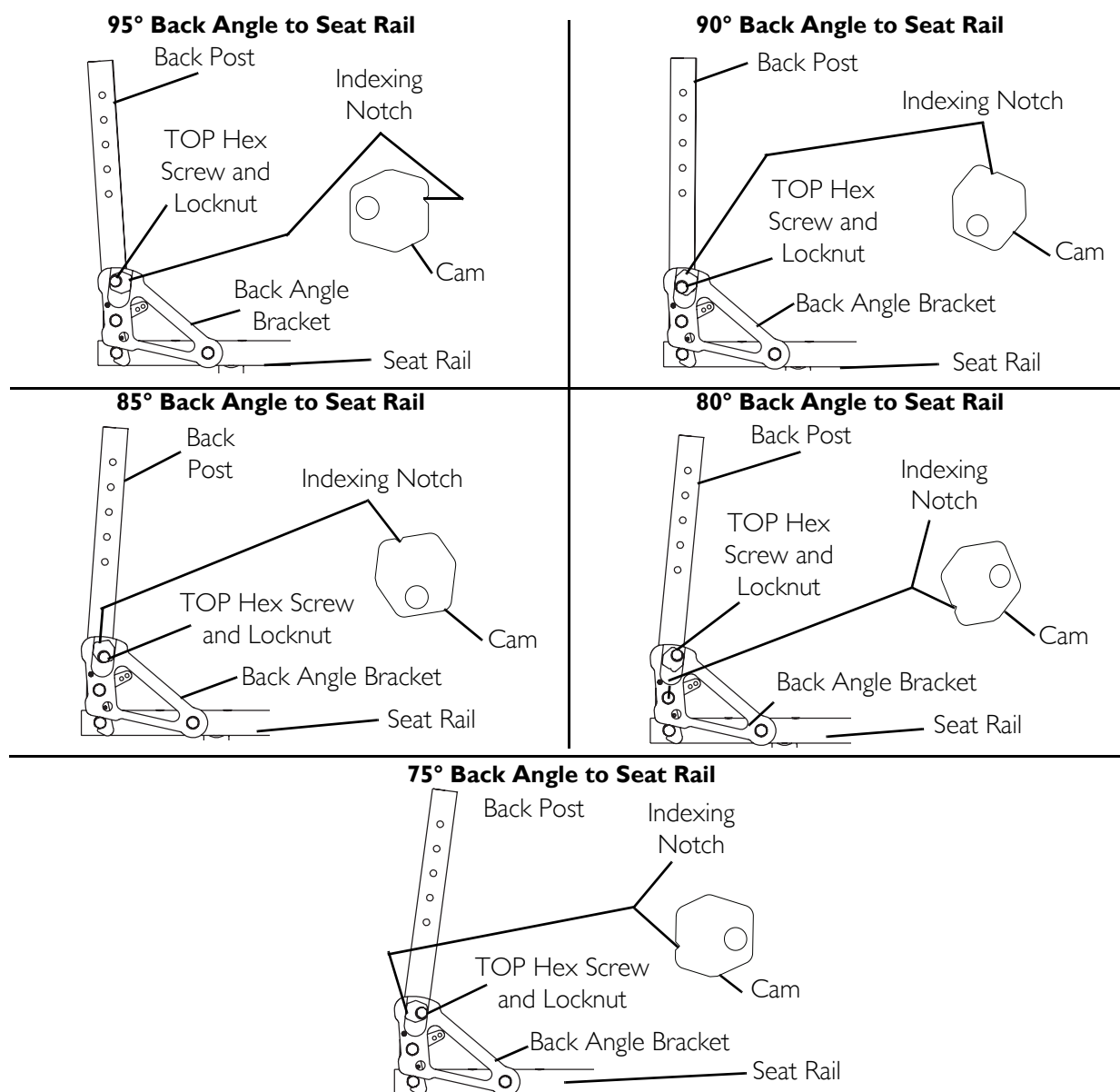
*NOTE: Perform this procedure on both sides of the wheelchair at the same time.*

1. Loosen, but DO NOT remove the locknuts and hex screws that secure the back angle bracket to the seat rail and the back post.
2. Loosen the top locknut and slide the top hex screw away from the back angle bracket to adjust the cam.
3. Adjust back post to back angle required.
4. Adjust cam to achieve desired position.

*NOTE: An indexing notch has been put on the cam to help determine cam position for desired back angle adjustment.*

5. Secure cam in desired position. Torque all hex screws and locknuts to 960-1020 inch pounds (80-85 foot-pounds) (9.04 - 9.6 newton-metres).

*NOTE: As shown in FIGURE 4.2, the adjustment cam can be rotated to several different positions thus changing the overall back angle relative to the seat rail.*



**FIGURE 4.2** Back Angle Adjustment

## Removing/Installing Foldover Back Upholstery

### **⚠ WARNING**

The position of the footrest, seat angle, back angle, seating system/upholstery, castor size and position, rear wheel size and position, use of anti-tippers, as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the ten may cause the wheelchair to decrease in stability. **EXTREME** care **MUST** be taken when changing the stability of the wheelchair. Refer to the chart in General Guidelines on page 15 of this manual.

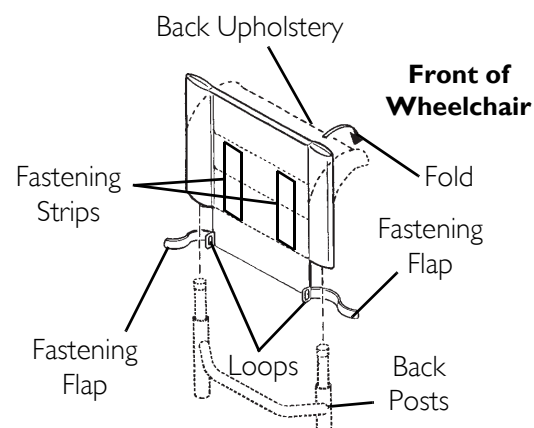
*NOTE: For this procedure, refer to FIGURE 4.3.*

### Removing Foldover Back Upholstery

1. Unfasten the two fastening flaps that secure the bottom of the existing back upholstery to the back posts.
2. Unfold the top of the back upholstery.
3. Lift up on the existing back upholstery and remove from the wheelchair.

### Installing Foldover Back Upholstery

1. Install the new back upholstery onto the back posts.
2. Wrap the end of a fastening flap around the back post.
3. Insert the end of the fastening flap through the loop.
4. Wrap the fastening flap around the back post again and press firmly to secure.
5. Fold the top of the back upholstery down over the back posts towards the front of the wheelchair.
6. Press firmly to secure the fastening strips.



**FIGURE 4.3** Removing/Installing Foldover Back Upholstery

## Adjustable Tension Back Upholstery

### ⚠ WARNING

The position of the footrest, seat angle, back angle, seating system/upholstery, castor size and position, rear wheel size and position, use of anti-tippers, as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the ten may cause the wheelchair to decrease in stability. **EXTREME** care **MUST** be taken when changing the stability of the wheelchair. Refer to the chart in General Guidelines on page 15 of this manual.

*NOTE: For this procedure, refer to FIGURE 4.4.*

### The Adjustable Tension Straps

The straps can be adjusted at various levels of tension to accommodate individual end-users. The bottom two straps can be adjusted tightly to support and/or assist the extensor muscles.

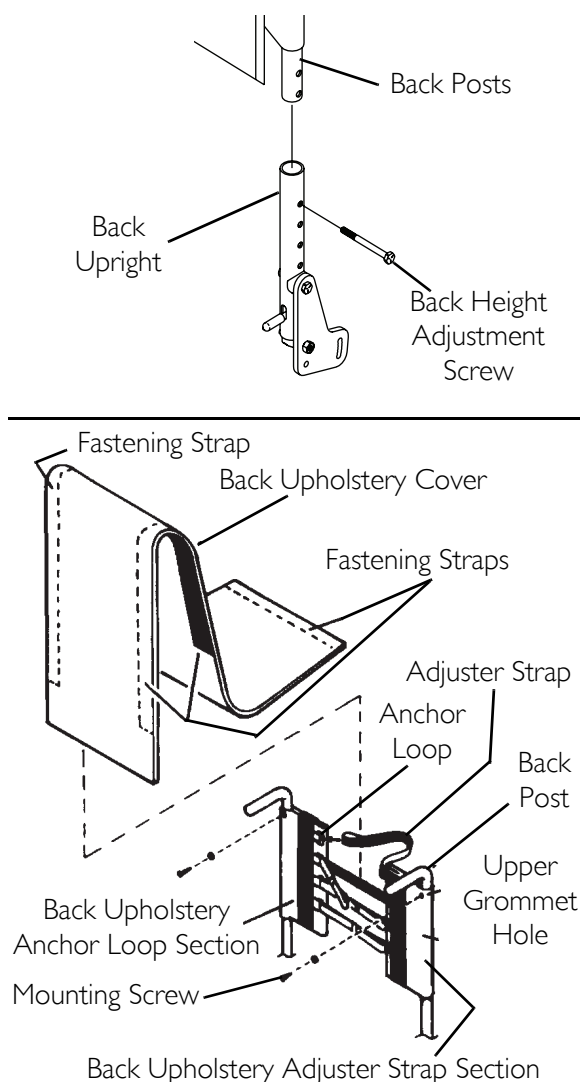
### The Back Upholstery Cover

*NOTE: The back upholstery cover is designed for three reasons:*

- The first is as a modesty cover.
- The second is to keep the cushion from sliding out of the back of the wheelchair.
- The third is a sacral support depending upon how far or tight the flap is pulled under the seat cushion

### Replacing Adjustable Tension Back Upholstery

1. Remove the back height adjustment screws that secure the back posts to the back uprights.
2. Slide the back posts out of the back uprights.
3. Remove the two screws and washers that secure the existing back upholstery to the back posts.
4. Slide the existing back upholstery down and off the back posts.



**FIGURE 4.4** Adjustable Tension Back Upholstery



5. Stand behind the wheelchair and perform the following:
  - A. Slide anchor loop section of adjustable tension back upholstery up onto the left back post with the upper grommet hole facing the rear of the wheelchair.
  - B. Slide adjuster strap section of adjustable tension back upholstery up onto the right back post with the upper grommet hole facing the rear of the wheelchair.
6. Align the mounting hole in each back post with the desired mounting hole in each back upright.

*NOTE: Both back posts should be adjusted to the same height.*

7. Install the two back height adjustment screws through the back upright mounting holes determined in STEP 6 and the back post mounting holes.
8. Slip adjuster straps through corresponding anchor loops and adjust the back upholstery. Secure with the fastening straps.

---

### **⚠ WARNING**

**After the adjustable tension back upholstery has been positioned to the end-users individual needs, the fastening straps **MUST** be securely fastened **BEFORE** applying the back upholstery cover. The adjustable back should be checked whenever entering the wheelchair to ensure that the fastening straps are securely fastened.**

---

9. Secure the back upholstery cover (fastening strap) to the back of the adjustable back upholstery (fastening strap).
10. Flip the back upholstery cover over the adjustable back upholstery and secure the fastening straps to the front of the adjustable back upholstery.
11. Lay the front portion of the back upholstery cover on the seat pan.
12. Adjust the slack in the back upholstery cover and then secure to the seat pan fastening straps.

## **Back Height Adjustment (Adjustable Backs Only)**

*NOTE: For this procedure, refer to FIGURE 4.5 on page 34*

*NOTE: Observe the tautness of the back upholstery for reinstallation.*

1. Unlatch the two fastening flaps that secure the top of the back upholstery to the back posts and remove from the back posts.

---

### **⚠ WARNING**

**Push pin **MUST** be protruding through hole in back post.**

**Ensure that both back post inserts are at the same height **BEFORE** reassembling the wheelchair.**

---

2. Press the push pin on the back post insert tube in and adjust the back height to one of four heights depending on original back height:

ORIGINAL BACK HEIGHT (IN INCHES)	11 - 15 (27.94 - 38.1 CM)	14 - 18 (35.56 - 45.72 CM)	16 - 20 (40.64 - 50.8 CM)
Hole* Number			
1	11 (27.94 cm)	14 (35.56 cm)	16 (40.64 cm)
2	12 (30.48 cm)	15 (38.1 cm)	17 (43.18 cm)
3	13 (33.02 cm)	16 (40.64 cm)	18 (45.72 cm)
4	14 (35.56 cm)	17 (43.18 cm)	19 (48.25 cm)
**	15 (38.1 cm)	18 (45.72 cm)	20 (50.8 cm)

\*NOTE: Holes numbered from bottom to top for reference only. (There are no numbers on the back posts.)

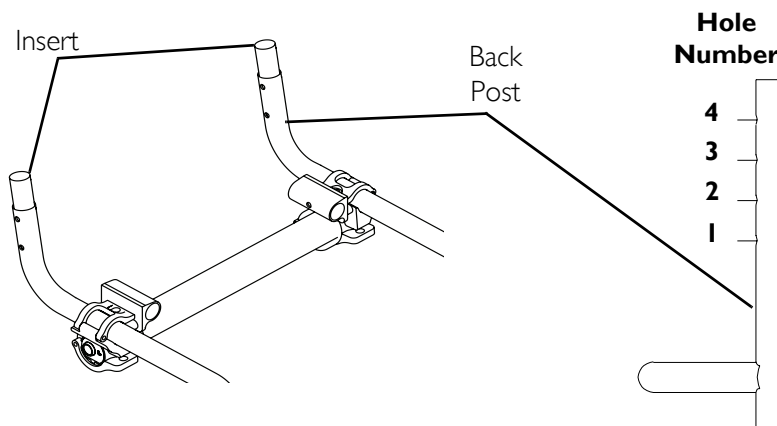
\*\*NOTE: There is a 1-inch (2.54 cm) adjustment pin on the back post insert tube. To raise back to maximum height, first make adjustment to the back post inserts.

3. Reinstall the fastening flaps onto the back posts.

NOTE: The fastening flap with logo is for the left back post.

NOTE: Right and left is determined by sitting in the wheelchair.

4. Adjust the new back upholstery to the desired tautness. Refer to Adjustable Tension Back Upholstery on page 32.



**FIGURE 4.5** Back Height Adjustment (Adjustable Backs Only)

## SECTION 5—WHEELS

### ⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

## Removing/Installing Rear Wheels

### CAUTION

Changing the size of the rear wheels can affect the performance of the wheelchair. Contact Invacare at the telephone numbers on the back of this manual before changing rear wheel size.

NOTE: For this procedure, refer to FIGURE 5.1.

1. Perform one of the following:
  - Quick-Release - Push in the tip of the quick-release axle and pull axle and wheel away from the wheelchair.
  - Quad-Release - Lift up on the handle of the quad-release axle and pull axle and wheel away from the wheelchair.
2. Repeat STEP 1 for the opposite rear wheel.
3. Reinstall the rear wheels onto the wheelchair by reversing STEPS 1-2.

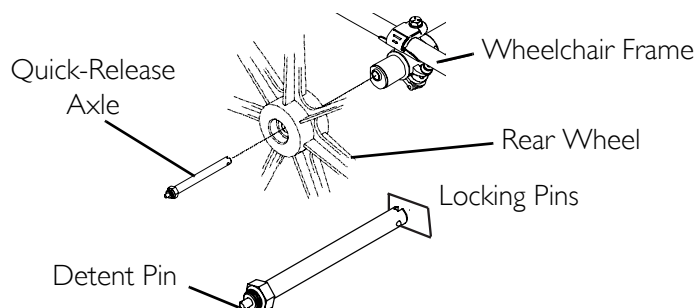
### ⚠ WARNING

Pull on the rear wheel to make sure the detent pin and locking pins of the quick/quad-release axle are fully released before operating wheelchair.

Keep locking pins clean.

4. If there is too much movement of the rear wheel assembly in a back and forth motion, refer to Adjusting Quick-Release Axles on page 36 or Adjusting Quad-Release Handles on page 37.

NOTE: Quad-Release Axle not shown. Locking pins on the Quad-Release Axle are the same as Quick-Release Axle.

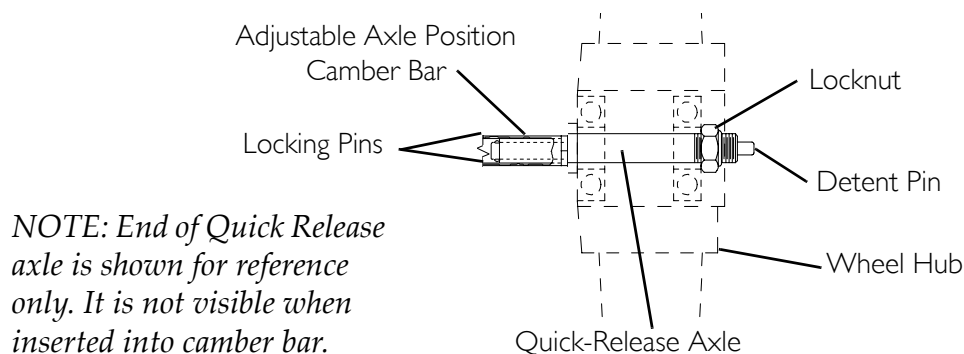


**FIGURE 5.1** Removing/Installing Rear Wheels

## Adjusting Quick-Release Axles

*NOTE: For this procedure, refer to FIGURE 5.2.*

1. Remove rear wheel and quick-release axle from the wheelchair. Refer to Removing/Installing Rear Wheels on page 35.
2. Depress detent pin in the quick-release axle and slide axle through the wheel hub.
3. Release detent pin ensuring that the locking pins are fully released.
4. Increase or decrease end play by adjusting the locknut on the end of the quick-release axle.
5. Reinstall rear wheel onto the wheelchair. Refer to Removing/Installing Rear Wheels on page 35.

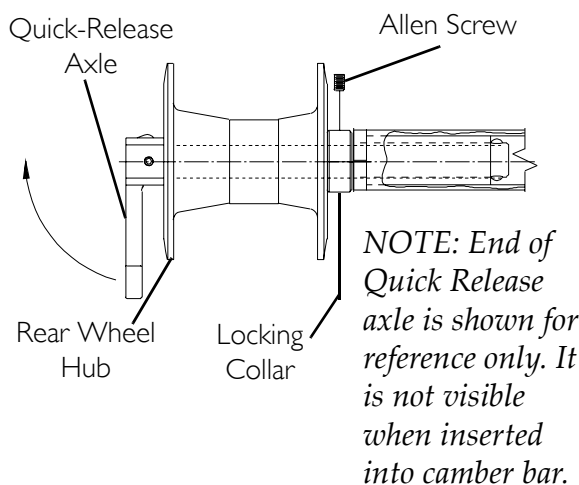


**FIGURE 5.2** Adjusting Quick-Release Axles

## Replacing Quad-Release Axles

*NOTE: For this procedure, refer to FIGURE 5.3.*

1. Remove rear wheel and the existing quick-release axle from the wheelchair. Refer to Removing/Installing Rear Wheels on page 35.
2. Remove existing quick-release axle from rear wheel.
3. Insert new quad-release axle through rear wheel hub.
4. Slide locking collar onto quad-release axle until it is snug against rear wheel and tighten securely with allen screw.
5. Reinstall rear wheel and the quad-release axle onto the wheelchair. Refer to Removing/Installing Rear Wheels on page 35.
6. Flip the handle of the quad-release axle down to release the detent pin ensuring that the locking pins are fully released.



**FIGURE 5.3** Replacing Quad-Release Axles

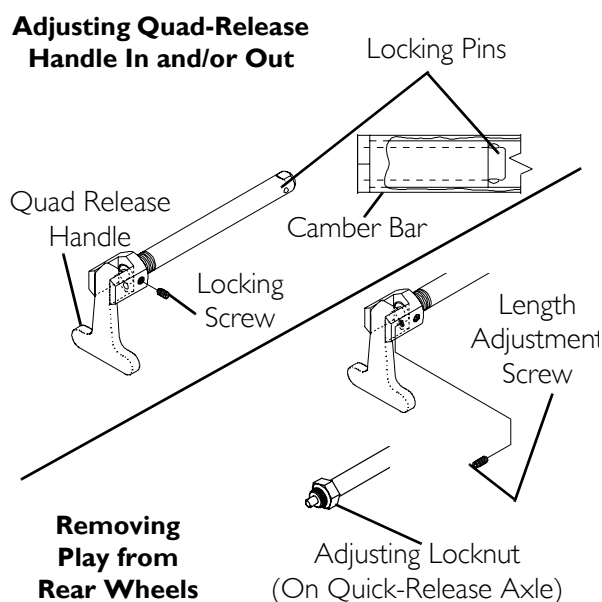
7. If detent pin does not fully release, proceed to [Adjusting Quad-Release Handles](#) on page 37.
8. Repeat STEPS 1-7 for the opposite rear wheel.

## Adjusting Quad-Release Handles

*NOTE: For this procedure, refer to FIGURE 5.4.*

### In and/or Out

1. Remove rear wheel and the quad-release axle from the wheelchair. Refer to [Removing/Installing Rear Wheels](#) on page 35.
2. Loosen the locking screw.
3. Make one or both of the following adjustments:
  - If the quad-release handle is not releasing the locking pins completely, rotate the quad-release handle approximately one-quarter turn clockwise.
  - If the quad-release handle hits the spokes of the rear wheel when assembled, rotate the quad-release handle approximately one-quarter turn counterclockwise.
4. Tighten the locking screw.
5. Reinstall the rear wheel and quad-release axle onto the wheelchair. Refer to [Removing/Installing Rear Wheels](#) on page 35.
6. Flip the handle of the quad-release axle down to release the detent pin ensuring that the locking pins are fully released.
7. Repeat the above procedures until the quad-release axle locks correctly.



**FIGURE 5.4** Adjusting Quad-Release Handles

### Removing Play from Rear Wheels

1. With the rear wheel and quad-release axle still mounted onto the wheelchair, make the following adjustment:
  - Tighten the length adjusting screw until there is no in and out movement of the quad-release axle and rear wheel.

## Handrim Replacement

*NOTE: For this procedure, refer to FIGURE 5.5.*

1. Remove the rear wheel from the wheelchair. Refer to [Removing/Installing Rear Wheels](#) on page 35.

---

### **⚠ WARNING**

**tyre MUST be fully deflated before any disassembly procedures are performed. Otherwise injury or damage may result.**

---

2. Remove all air from the tube by pressing down on the pin in the center of the valve stem.
3. While carefully holding the tyre, tube and rim strip to one side, hold the allen screws and remove the locknuts that secure the handrim to the rear wheel.
4. Remove the existing handrim.
5. Install new handrim by reversing STEPS 2-4.

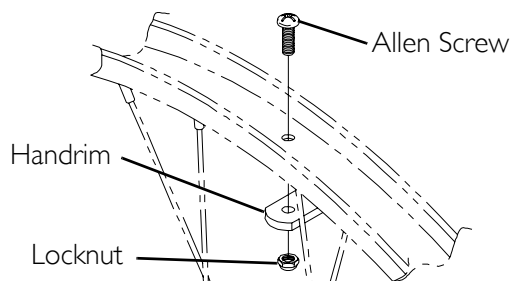
---

### **⚠ WARNING**

**DO NOT inflate tyre until it is completely assembled. Otherwise injury or damage may result.**

---

6. Inflate tyre to correct psi rating on the sidewall of tyre.
7. Reinstall rear wheel to the wheelchair. Refer to [Removing/Installing Rear Wheels](#) on page 35.
8. Repeat STEPS 1-7 for opposite rear wheel if necessary.



**FIGURE 5.5** Handrim Replacement

## Repairing/Replacing Rear Wheel, Tyre/Tube

---

### **⚠ WARNING**

**Replacement of the tyre or tube MUST be performed by a qualified technician.**

---

### **CAUTION**

**Changing the size of the rear wheels can affect the performance of the wheelchair. Contact Invacare at the numbers on the back cover before performing this procedure.**

---

*NOTE: If replacing rear wheels with a different size than what was originally on the wheelchair, the front castor height must also be changed to keep the wheelchair frame parallel to the floor. Refer to Adjusting Front Castor Height on page 55 ONLY after contacting Invacare. Anti-tipper height (if applicable) must also be adjusted to maintain 1-1/2 to 2-inch (3.81 to 5.08 cm) clearance between bottom of the anti-tipper wheels and the floor. Refer to Adjusting/Replacing Anti-Tipper on page 65.*

## Opening/Closing Camber Clamps

### **WARNING**

**QUICK RELEASE LEVERS** - Make sure the quick release levers are in the closed position before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.

**STANDARD AND SUSPENSION CAMBER CLAMPS** - Make sure the hex screws are securely tightened before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.

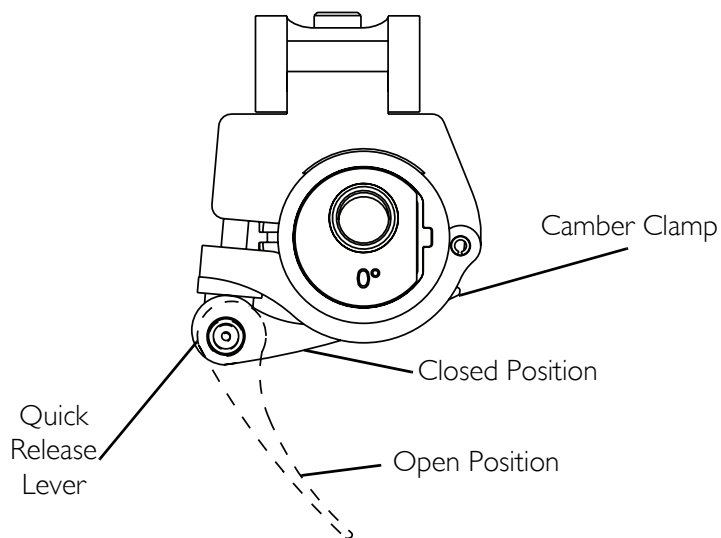
### **CAUTION**

**A4 CAMBER SYSTEM ONLY** - DO NOT close the quick-release levers or tighten the socket screws or hex screws without camber inserts in the axle tube. Damage to the axle tube will occur.

*NOTE: For this procedure, refer to FIGURE 5.6 on page 40.*

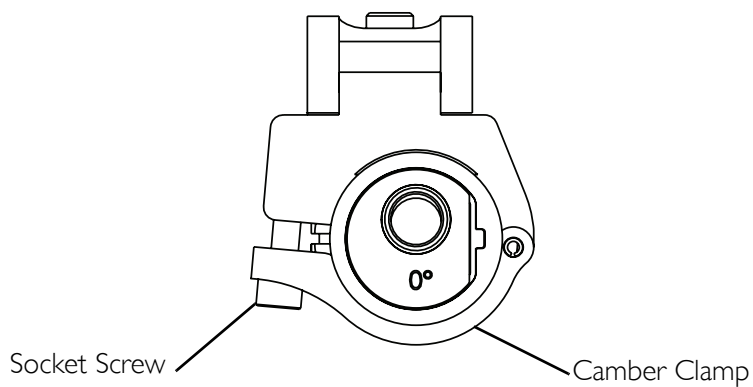
1. Perform one of the following to open a camber clamp:
  - Quick Release Levers - Pull the quick release lever to the open position.
  - Standard Camber Clamps - Loosen, but DO NOT remove the socket screw on the camber clamp.
  - Suspension Camber Clamps - Loosen, but DO NOT remove the hex screw on the bottom rear of the camber clamp.
2. Perform one of the following to close a camber clamp:
  - Quick Release Levers - Secure the quick release lever to the camber clamp by threading it completely into the camber clamp. Push the quick release lever on the camber clamps to the closed position.
  - Standard Camber Clamps - Securely tighten the socket screw to secure the axle tube.
  - Suspension Camber Clamp - Securely tighten the hex screw on the bottom rear of the camber clamp to secure the axle tube.

**Side View of Quick Release Lever**



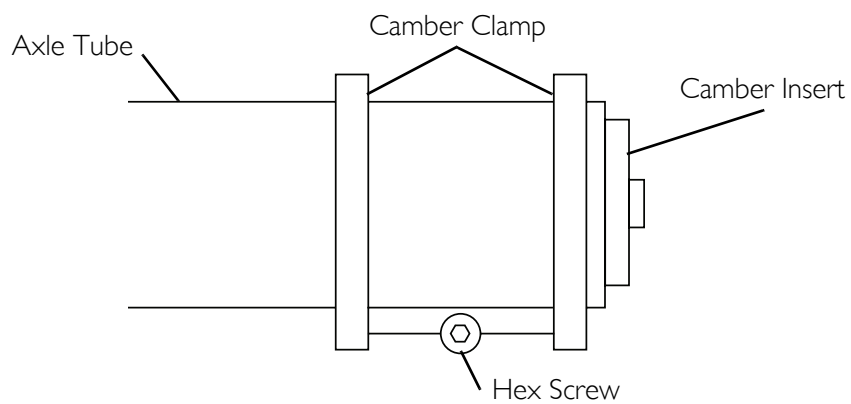
---

**Side View of Standard Camber Clamp**



---

**Rear View of Suspension Camber Clamp**



**FIGURE 5.6** Opening/Closing Camber Clamps



## Adjusting Rear Wheel Camber

*NOTE: For this procedure, refer to FIGURE 5.7.*

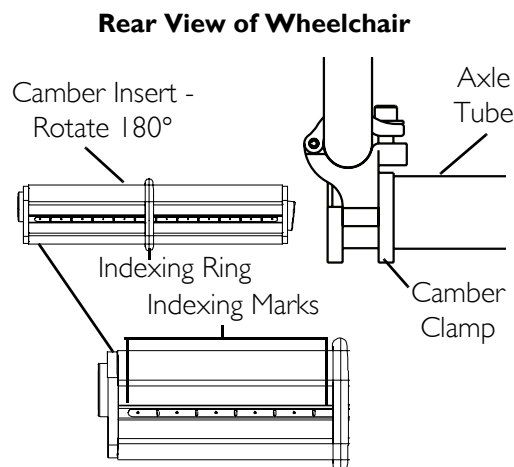
### Camber Tube 2000

The axle tube must be replaced to change the camber. Refer to Replacing Axle Tube on page 49.

### A4 Camber System

*NOTE: Perform this procedure to one side of the wheelchair at a time for ease of adjustment.*

1. Open the camber clamp. Refer to Opening/Closing Camber Clamps on page 39.
2. Pull one rear wheel with camber insert out of axle tube.
3. Remove the rear wheel from the camber insert.
4. Rotate the camber insert 180°.
5. Reinstall the rear wheel into the camber insert.



**FIGURE 5.7** Adjusting Rear Wheel Camber - A4 Camber System

### **⚠ WARNING**

**NEVER** position the camber inserts in the axle tube with more than 3-inches (7.62 cm) (12 indexing marks showing) of the camber insert outside of the axle tube. The camber inserts will not be securely tightened in the axle tube. Possible injury to the user and/or damage to the wheelchair may occur.

6. Position the camber insert to the desired position. Make sure there is no more than 3 inches (7.62 cm) (12 indexing marks) of the camber inserts outside of the axle tube.
7. Slide the indexing ring on the camber insert until it is flush with the camber clamp.

*NOTE: Before using the wheelchair, make sure both camber inserts are set to the same indexing mark. This will make sure the distance between the rear wheel and the wheelchair is the same on both sides.*

### **⚠ WARNING**

**QUICK RELEASE LEVERS** - Make sure the quick release levers are pointing towards the rear of the wheelchair and are in the closed position before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.

**⚠ WARNING**

**STANDARD AND SUSPENSION CAMBER CLAMPS** - Make sure the hex screws are securely tightened before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.

---

8. Close the camber clamp. Refer to Opening/Closing Camber Clamps on page 39.
9. Repeat STEPS 1-8 for opposite side of wheelchair.
10. Reinstall rear wheel to the wheelchair. Refer to Removing/Installing Rear Wheels on page 35.
11. Adjust toe in/toe out of wheelchair. Refer to Adjusting Toe In/Toe Out on page 43.

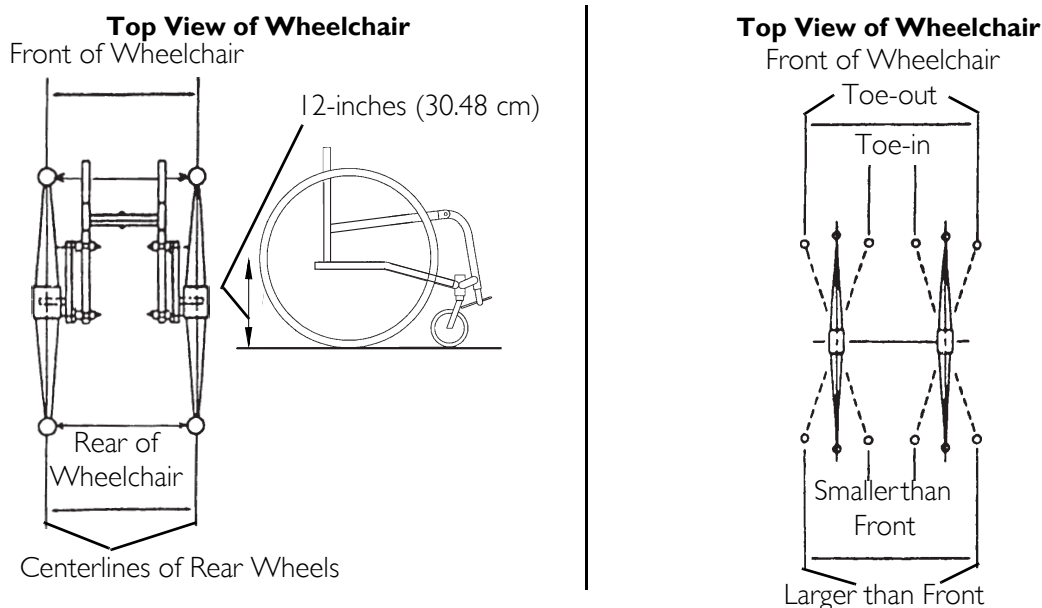
## Determining Toe In/Toe Out

*NOTE: For this procedure, refer to FIGURE 5.8 on page 43.*

1. Inflate all pneumatic tyres to recommended tyre pressures (listed on the sidewall of the tyre).
2. Measure the distance between the centerlines at the rear and front of the rear wheels at approximately 12 inches (30.48 cm) from the ground/floor (FIGURE 5.8).

*NOTE: For optimum accuracy, perform STEP 2 with the wheelchair occupied.*

3. Determine difference between two measurements. If difference between the two measurements is greater than 1/2-inch (1.27 cm) (0 + 1/4-inch (.63 cm) for maximum rollability), one of two conditions exists:
  - If the back centerline measurement of the rear wheels is SMALLER than the front centerline measurement of the rear wheels, a TOE-OUT condition exists (FIGURE 5.8).
  - If the back centerline measurement of the rear wheels is LARGER than the front centerline measurement of the rear wheels, a TOE-IN condition exists (FIGURE 5.8).
4. If the difference between the measurements is greater than 1/2-inch (1.27 cm), correct the toe-in/toe-out condition. Refer to Adjusting Toe In/Toe Out on page 43.



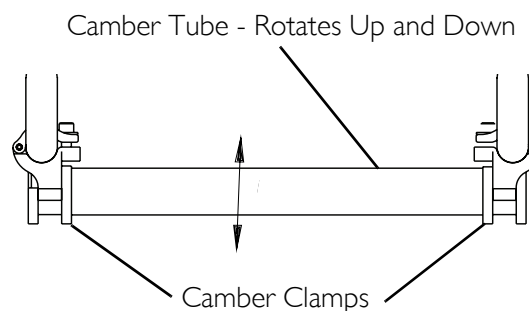
**FIGURE 5.8** Determining Toe In/Toe Out - Measuring Centerlines of Rear Wheels

## Adjusting Toe In/Toe Out

### Camber Tube 2000

*NOTE: For this procedure, refer to FIGURE 5.9.*

1. Open the camber clamps. Refer to Opening/Closing Camber Clamps on page 39.
2. Slowly rotate the camber tube in either direction until the rear wheels are approximately in a straight line.
3. Close the camber clamps. Refer to Opening/Closing Camber Clamps on page 39.
4. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12 inches (30.48 cm) from the ground/floor. Refer to Determining Toe In/Toe Out on page 42.
5. Repeat STEPS 1-4 until the toe in/toe out measurement is less than 1/2-inch (1.27 cm) ( $0 \pm 1/4$ -inch (.63 cm) for maximum rollability).



**FIGURE 5.9** Adjusting Toe In/Toe Out - Camber Tube 2000

## A4 Camber System

### Course Adjustment

*NOTE: For this procedure, refer to FIGURE 5.10 on page 45.*

*NOTE: This procedure is required any time the axle tube is moved from the factory set position or is replaced.*

*NOTE: Make the following adjustment for one camber at a time.*

1. Open the camber clamps. Refer to Opening/Closing Camber Clamps on page 39.
2. Loosen the phillips screws that secure the adjustment rings to the axle tube.
3. Slowly rotate the axle tube until the rear wheels are approximately in a straight line.

---

### **⚠ WARNING**

**QUICK RELEASE LEVERS - Make sure the quick release levers are pointing towards the rear of the wheelchair and are in the closed position before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.**

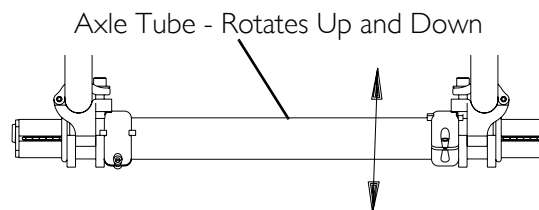
**STANDARD AND SUSPENSION CAMBER CLAMPS - Make sure the hex screws are securely tightened before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.**

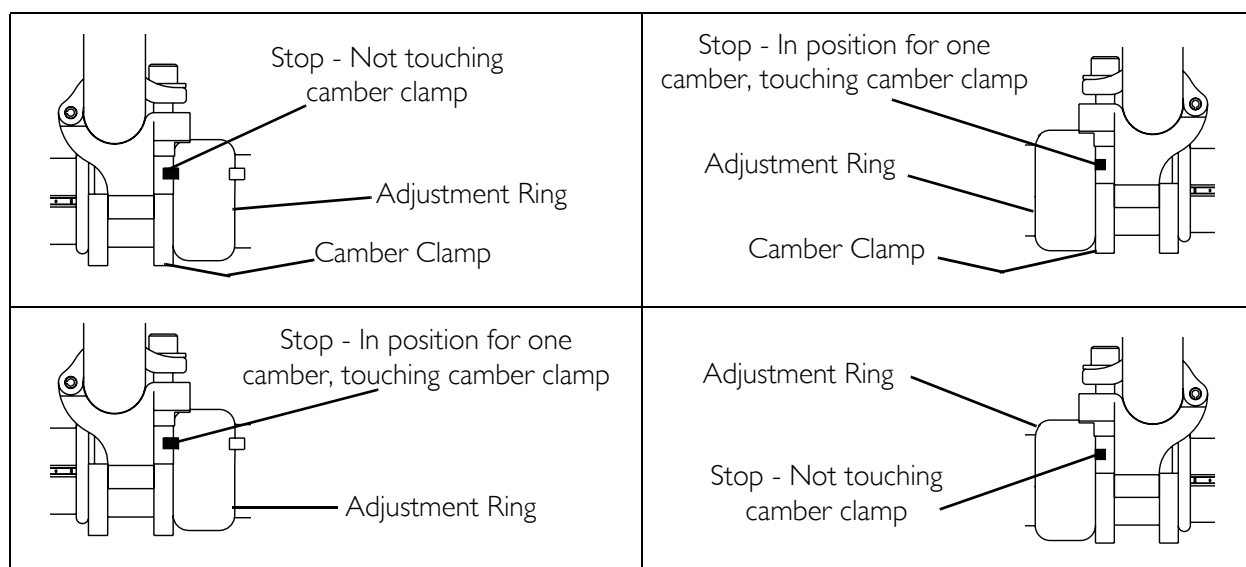
---

4. Close the camber clamp. Refer to Opening/Closing Camber Clamps on page 39.
5. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12 inches (30.48 cm) from the ground/floor. Refer to Determining Toe In/Toe Out on page 42.
6. Repeat STEPS 1-4 until the toe in/toe out measurement is less than 1/2-inch (1.27 cm) ( $0 \pm 1/4$ -inch (.63 cm) for maximum rollability).
7. Rotate either the right or left adjustment ring until the stop on the ring is at the top of the slot in the camber clamp as shown in FIGURE 5.10 and securely tighten the phillips screw on the positioned adjustment ring.

*NOTE: Rear wheels are removed from the drawings for clarity. There is no need to remove rear wheels from the wheelchair during adjustment.*

*NOTE: FIGURE 5.10 shows two examples of how the adjustment rings can be positioned.*





**FIGURE 5.10** Adjusting Toe In/Toe Out - A4 Camber System - Course Adjustment

*NOTE: DO NOT tighten the phillips screw on the other adjustment ring at this time.*

*NOTE: Repeat STEPS 1-7 of this procedure for the other adjustment ring after repositioning the camber insert. Refer to Adjusting Rear Wheel Camber on page 41.*

*NOTE: When positioning the other adjustment ring, rotate the ring until the stop is at the bottom of the slot in the camber clamp. The right and left stops **MUST** be positioned opposite to each other or Fine Adjustment on page 45 will not work correctly.*

*NOTE: When the left adjustment ring is adjusted to a camber, the right adjustment ring will not touch the camber clamp and when the right adjustment ring is adjusted to the other camber the left adjustment ring will not touch the camber clamp.*

### Fine Adjustment

*NOTE: For this procedure, refer to FIGURE 5.11 on page 46.*

*NOTE: This adjustment is required anytime the camber insert is repositioned.*

1. Open the camber clamp. Refer to Opening/Closing Camber Clamps on page 39.
2. Slowly rotate the axle tube until the stop on the opposite adjustment ring is positioned at the opposite end of the camber clamp.

## ⚠ WARNING

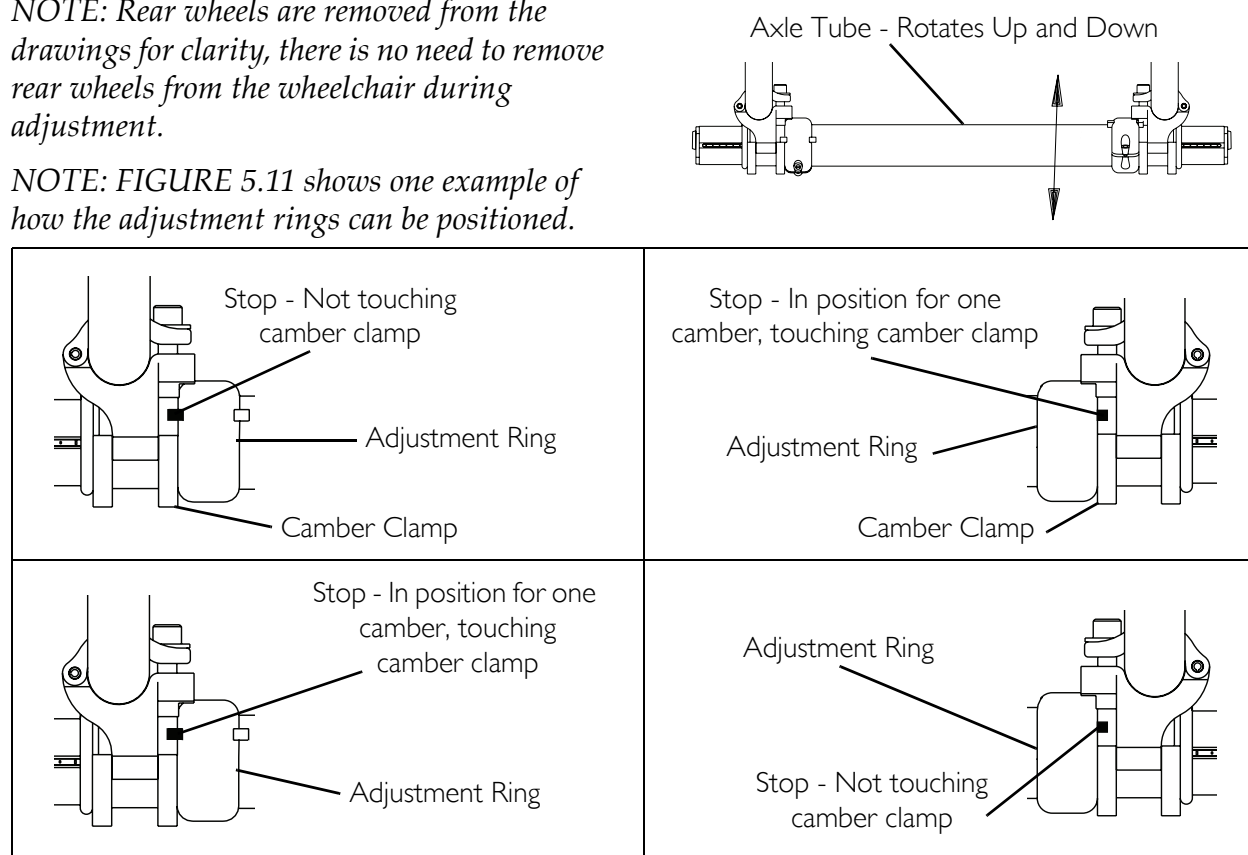
**QUICK RELEASE LEVERS** - Make sure the quick release levers are pointing towards the rear of the wheelchair and are in the closed position before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.

**STANDARD AND SUSPENSION CAMBER CLAMPS** - Make sure the hex screws are securely tightened before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.

3. Close the camber clamp. Refer to Opening/Closing Camber Clamps on page 39.

*NOTE: Rear wheels are removed from the drawings for clarity, there is no need to remove rear wheels from the wheelchair during adjustment.*

*NOTE: FIGURE 5.11 shows one example of how the adjustment rings can be positioned.*



**FIGURE 5.11** Adjusting Toe In/Toe Out - A4 Camber System - Fine Adjustment

## Adjusting Wheelbase Length (Adjusting Center of Gravity)

### **⚠ WARNING**

**ALWAYS** perform this procedure in the presence of an assistant. The position of the footrest, camber tube, back angle, the tautness of the back upholstery as well as the user's condition are directly related to the wheelchairs stability. Any change to one or any combination of the five may cause the wheelchair to decrease in stability. Use **EXTREME** caution when using a new seating position. The addition of anti-tip-pers may be required.

*NOTE: For this procedure, refer to FIGURE 5.12 on page 47.*

*NOTE: The camber bar is always mounted to the BOTTOM of the wheelchair frame.*

1. Perform one of the following:
  - Non-Suspension - Loosen, but DO NOT remove the hex screw that secures each of the top clamps to the wheelchair frame.
  - Suspension - Loosen, but DO NOT remove the two hex screws that secure each of the top clamps to the wheelchair frame.
2. Position the camber clamps on the wheelchair frame at the desired position.
  - Lengthening the Wheelbase - Will increase the stability and maintain standard manoeuvrability of the wheelchair.
  - Shortening the Wheelbase - Will decrease the stability, increase the manoeuvrability and distribute additional weight onto the rear wheels.

*NOTE: Wheelchair performance will be affected if the camber clamps DO NOT sit flush on the wheelchair frame.*

3. Perform one of the following:
  - Non-Suspension - Securely tighten the hex screw that secures one of the top clamps to the wheelchair frame.
  - Suspension - Securely tighten the two hex screws that secure one of the top clamps to the wheelchair frame.

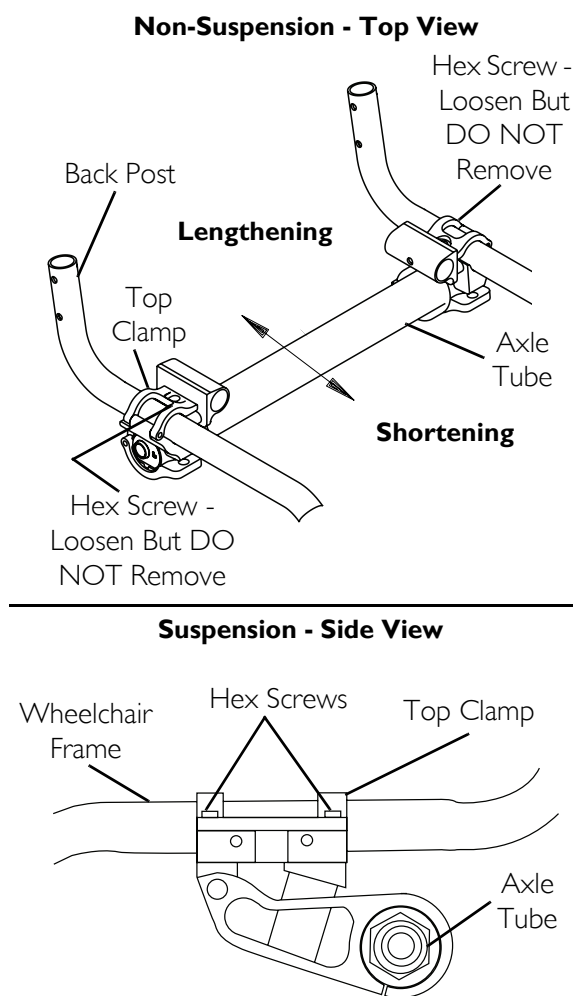
*NOTE: Securely tightening one hex screw at a time ensures that the camber clamps will sit flush on the wheelchair frame.*

4. Repeat STEP 3 for opposite side of the wheelchair.

*NOTE: The distance between the back post and the back of the top clamp on each side of the wheelchair can be measured as an additional check to make sure the camber clamps sit flush on the wheelchair frame (the measurements should be the same).*

5. Roll the wheelchair before using to make sure there is no excessive drag to either side.

*NOTE: If drag to either side occurs, refer to Determining Toe In/Toe Out on page 42.*



**FIGURE 5.12** Adjusting Wheelbase Length (Adjusting Center of Gravity)

## Adjusting Wheelbase Width

*NOTE: Perform this procedure on one side of the wheelchair at a time for ease of adjustment.*

### Camber Tube 2000

*NOTE: For this procedure, refer to FIGURE 5.13.*

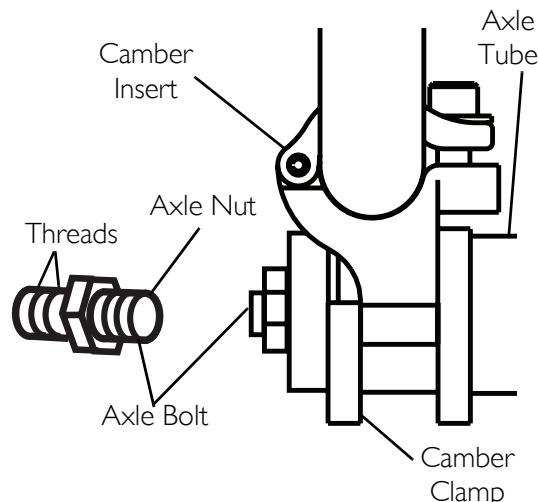
*NOTE: The wheelbase width can be increased/decreased by 1-inch (2.54 cm).*

1. Remove the rear wheels. Refer to Removing/Installing Rear Wheels on page 35.
2. Torque the axle nut to increase/decrease the wheelbase width.
3. Count the number of threads showing on the axle bolt.

*NOTE: The number of threads showing on the axle bolt should be equal on both sides of the wheelchair. Otherwise, wheelchair performance may be affected.*

4. Repeat STEPS 2-3 for the opposite axle nut and axle bolt.

*NOTE: Axle bolt removed from axle tube for clarity. It is not necessary to remove the axle bolt for this procedure.*



**FIGURE 5.13** Adjusting Wheelbase Width  
- Camber Tube 2000

### A4 Camber System

*NOTE: For this procedure, refer to FIGURE 5.14 on page 49.*

1. Open the camber clamp. Refer to Opening/Closing Camber Clamps on page 39.

#### **⚠ WARNING**

**NEVER** position the camber inserts in the axle tube with more than 3 inches (7.62 cm) (12 indexing marks showing) of the camber insert outside of the axle tube. The camber inserts will not be securely tightened in the axle tube. Possible injury to the user or damage to the wheelchair may occur.

2. Position camber insert to the desired position. Make sure there are no more than 3 inches (7.62 cm) (12 indexing marks showing) of the camber inserts outside of the axle tube.
3. Slide the indexing ring on the camber insert until it is flush with the camber clamp.

*NOTE: Before using the wheelchair, make sure both camber inserts are set at the same indexing mark. This will make sure the distance between the rear wheel and the wheelchair is the same on both sides.*

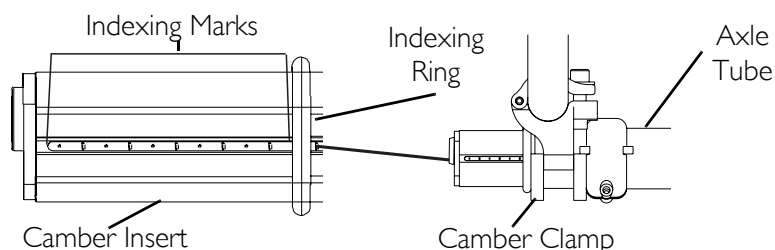


## ⚠ WARNING

**QUICK RELEASE LEVERS** - Make sure the quick release levers are pointing towards the rear of the wheelchair and are in the closed position before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.

**STANDARD AND SUSPENSION CAMBER CLAMPS** - Make sure the hex screws are securely tightened before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.

4. Close the camber clamp. Refer to Opening/Closing Camber Clamps on page 39.
5. Repeat STEPS 1-4 for opposite side of wheelchair.



**FIGURE 5.14** Adjusting Wheelbase Width - A4 Camber System

## Replacing Axle Tube

*NOTE: For this procedure, refer to FIGURE 5.15 on page 51.*

*NOTE: The camber bar is always mounted to the bottom of the wheelchair frame.*

*NOTE: There is no need to remove the two camber clamps when replacing the axle tube.*

1. A4 Camber System Only - Note the position of the camber inserts so they can be installed at the same position in the new axle tube.
2. Open the camber clamps. Refer to Opening/Closing Camber Clamps on page 39.
3. Remove the two rear wheels. Refer to Removing/Installing Rear Wheels on page 35.
4. A4 Camber System Only - Remove the camber inserts positioned in the axle tube.
5. A4 Camber System Only - Loosen, but DO NOT remove the two phillips screws that secure the toe adjustment rings to the axle tube.
6. Pull the existing axle tube through one of the camber clamps.
7. A4 Camber System Only - Remove toe adjustment rings from the existing axle tube.
8. Pull the existing axle tube through the other camber clamp and remove from the wheelchair.
9. Slide the new axle tube through one of the camber clamps.

*NOTE: A4 Camber System Only - Make sure the notches in the axle tube are towards the rear of the wheelchair and the slots in the axle tube are facing up.*

10. A4 Camber System Only - Install the adjustment rings onto the new axle tube. Make sure the stops on the adjustment rings are facing towards the outside of the wheelchair.

*NOTE: DO NOT tighten the phillips screws that secure the adjustment rings to the axle tube at this time.*

11. Slide the new axle tube through the other camber clamp until the axle tube is evenly spaced between the camber clamps.

*NOTE: DO NOT close the camber clamps at this time.*

---

### **WARNING**

**NEVER position the camber inserts in the axle tube with more than 3 inches (7.62 cm) (12 indexing marks showing) of the camber insert outside of the axle tube. The camber inserts will not be securely tightened in the axle tube. Possible injury to the user or damage to the wheelchair may occur.**

---

12. A4 Camber System Only - Install camber inserts into the new axle tube and slide the camber inserts to the position noted in STEP 1. Make sure there are no more than 3 inches (12 indexing marks) of the camber inserts outside of the axle tube.

13. A4 Camber System Only - Slide the indexing ring on the camber insert until it is flush with the camber clamp.

*NOTE: To maximize rollability: Before using the wheelchair, make sure both camber inserts are set to the same indexing notch. This will make sure the distance between the rear wheel and the wheelchair is the same on both sides.*

14. Install the rear wheels onto the wheelchair. Refer to Removing/Installing Rear Wheels on page 35.

15. Adjust the axle tube. Refer to Adjusting the Axle Tube on page 51.

*NOTE: The performance of the wheelchair will be affected if the toe in/toe out of the wheelchair is not correct. Refer to Determining Toe In/Toe Out on page 42.*

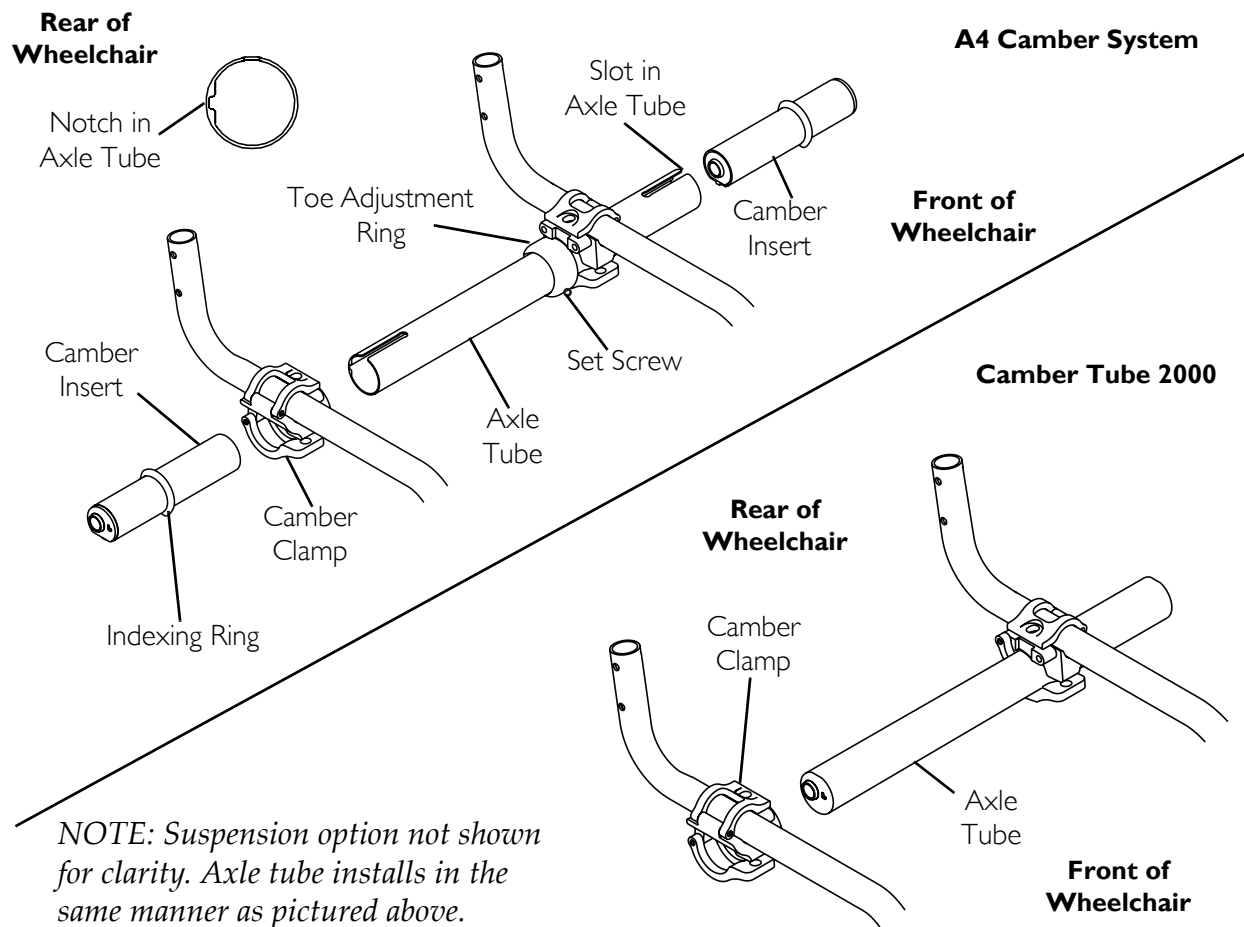


FIGURE 5.15 Replacing Axle Tube

## Adjusting the Axle Tube

### ⚠ WARNING

**QUICK RELEASE LEVERS** - Make sure the quick release levers are in the closed position before using the wheelchair, otherwise injury or damage to the wheelchair may occur.

**STANDARD** and suspension camber clamps - Make sure the hex screws are securely tightened before using the wheelchair, otherwise injury or damage to the wheelchair may occur.

### CAUTION

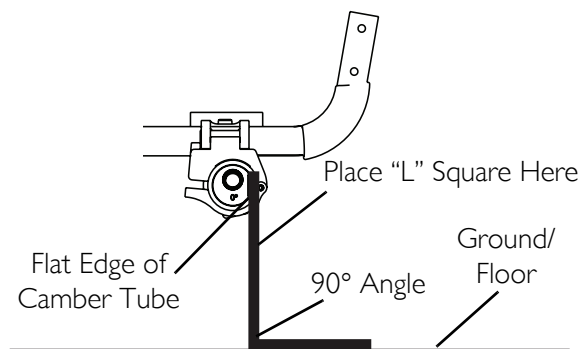
**A4 CAMBER SYSTEM ONLY** - DO NOT close the quick-release levers or tighten the hex screws without camber inserts in the axle tube. Damage to the axle tube will occur.

*NOTE: Stand behind the wheelchair to determine left or right.*

## Camber Tube 2000

NOTE: For this procedure, refer to FIGURE 5.16.

1. If necessary, open both camber clamps. Refer to Opening/Closing Camber Clamps on page 39.
2. Using an "L" square, rotate the axle tube until the flat edge of the camber tube is at a 90° angle with the ground/floor as shown in FIGURE 5.16.
3. Close both camber clamps. Refer to Refer to Opening/Closing Camber Clamps on page 39.
4. Determine the toe in/toe out of the wheelchair. Refer to Determining Toe In/Toe Out on page 42.



**FIGURE 5.16** Adjusting the Axle Tube - Camber Tube 2000

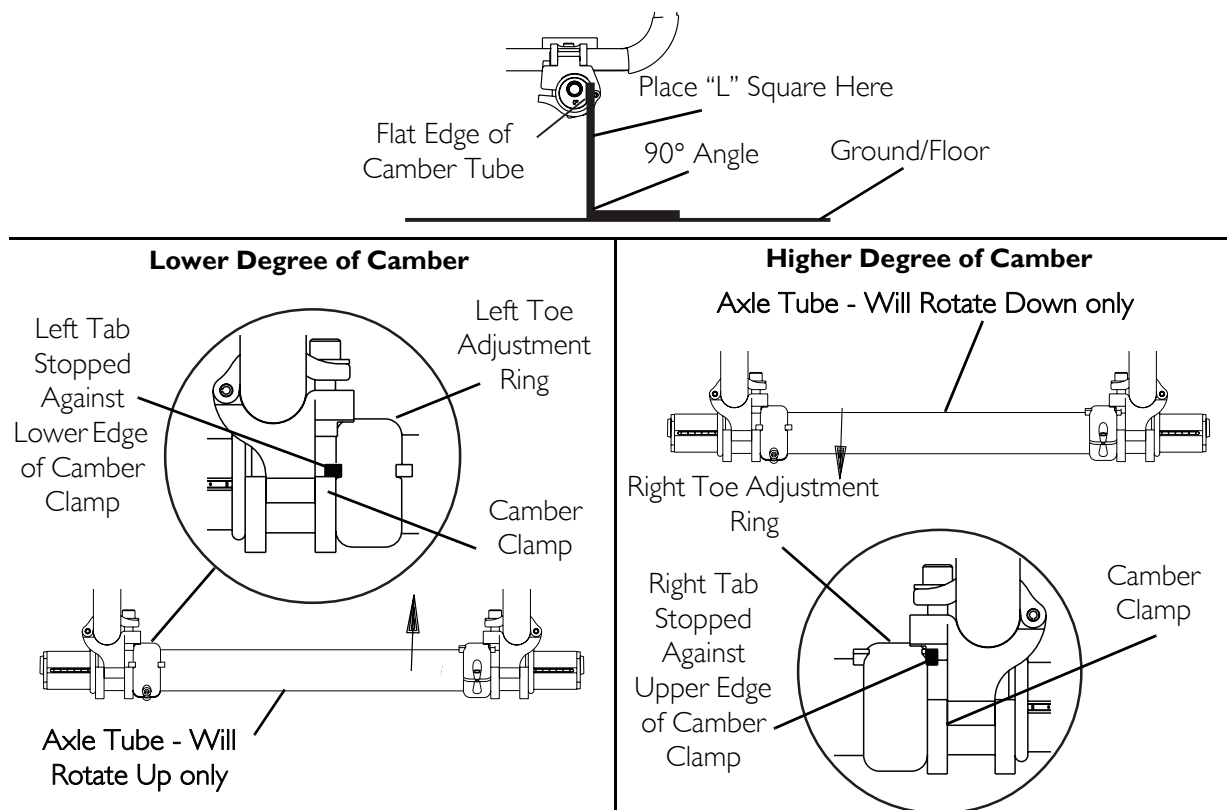
## A4 Camber System

NOTE: For this procedure, refer to FIGURE 5.17 on page 53.

NOTE: Before performing this procedure, make sure the camber inserts are positioned to the lowest degree of camber. Refer to Adjusting Rear Wheel Camber on page 41.

1. If necessary, open both camber clamps. Refer to Opening/Closing Camber Clamps on page 39.
2. Loosen the set screw that secures each toe adjustment ring to the axle tube (FIGURE 5.17).
3. Using an "L" square, rotate the axle tube until the flat edge of the camber insert is at a 90° angle with the ground/floor as shown in FIGURE 5.17.
4. Close the right camber clamp. Refer to Opening/Closing Camber Clamps on page 39.
5. Rotate the Left toe adjustment ring until the tab stops against the Lower metal tab on the camber clamp.
6. Securely tighten set screw on left toe adjustment ring.
7. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12 inches (30.48 cm) from the ground/floor. Refer to Determining Toe In/Toe Out on page 42.
8. Perform one of the following:
  - Toe In/Toe Out Measurement is Within  $\pm 1/8$ -inch (.32 cm) - Proceed to STEP 9.
  - Toe In/Toe Out Measurement is Not Within  $\pm 1/8$ -inch (.32 cm) - Repeat STEPS 1-7 until toe in/toe out measurement is within  $\pm 1/8$  inch.
9. Open the right camber clamp. Refer to Opening/Closing Camber Clamps on page 39.

10. Reposition the camber inserts to the highest degree of camber. Refer to Adjusting Rear Wheel Camber on page 41.
11. Repeat STEP 3.
12. Close the left camber clamp. Refer to Opening/Closing Camber Clamps on page 39.
13. Rotate the right toe adjustment ring until the tab stops against the upper metal tab on the camber clamp.
14. Securely tighten set screw on right toe adjustment ring.
15. Repeat STEP 7.
16. Perform one of the following:
  - Toe In/Toe Out Measurement is Within  $\pm 1/8$ -inch (.32 cm) -
    - i. Proceed to STEP 17.
  - Toe In/Toe Out Measurement is Not Within  $\pm 1/8$ -inch (.32 cm) -
    - i. Repeat STEP 1.
    - ii. Loosen the set screw on the right toe adjustment ring.
    - iii. Repeat STEP 3.
    - iv. Repeat STEPS 12-16 until toe in/toe out measurement is within  $\pm 1/8$  (.32 cm) inch.
17. If desired, reposition camber inserts to the desired degree of camber. Refer to Adjusting Rear Wheel Camber on page 41.



**FIGURE 5.17** Adjusting the Axle Tube - A4 Camber System

## Replacing/Adjusting Castors

---

### CAUTION

**Changing the size/type of and/or repositioning the front castors can affect the performance of the wheelchair. Contact Invacare at the telephone numbers on the back of this manual before performing this procedure.**

---

*NOTE: For this procedure, refer to FIGURE 5.18 on page 55.*

*NOTE: Non-suspension castors cannot be adjusted as they mount in one position only.*

1. Perform one of the following:
  - Non-Suspension Fork - Remove the bolt and locknut that secure the front castor to the fork.
  - Suspension Fork - Perform the following steps:
    - i. Using two allen wrenches, turn in opposite directions and remove one mounting screw from the fork.
    - ii. Remove the mounting screw/threaded sleeve assembly that secures the front castor and two spacers to the fork.
2. Remove front castor and axle spacers from fork.
3. Perform one of the following:
  - Non-Suspension Fork - Install the new castor, bolt, locknut and axle spacers onto the fork and securely tighten.
  - Suspension Fork - Perform the following steps:
    - i. Determine the desired mounting hole for the castor installation.
    - ii. Line up the front castor and two spacers with the mounting hole in the fork determined in STEP B-i.
    - iii. Reinstall the mounting screw/threaded sleeve assembly through the fork, front castor and two spacers. Refer to FIGURE 5.18 for hardware orientation.
    - iv. Reinstall the mounting screw into the threaded sleeve and tighten securely.

---

### WARNING

**Both front castors MUST be positioned to the same corresponding mounting hole, otherwise injury or damage may occur.**

---

4. Repeat STEPS 1-3 for the opposite castor if necessary.

*NOTE: If replacing front castors with a different size than what was originally on the wheelchair, the front castor height MUST be adjusted to keep the wheelchair frame parallel to the floor. Refer to Adjusting Front Castor Height on page 55. The size of the rear wheels may also need adjustment. Refer to Repairing/Replacing Rear Wheel, Tyre/Tube on page 38.*

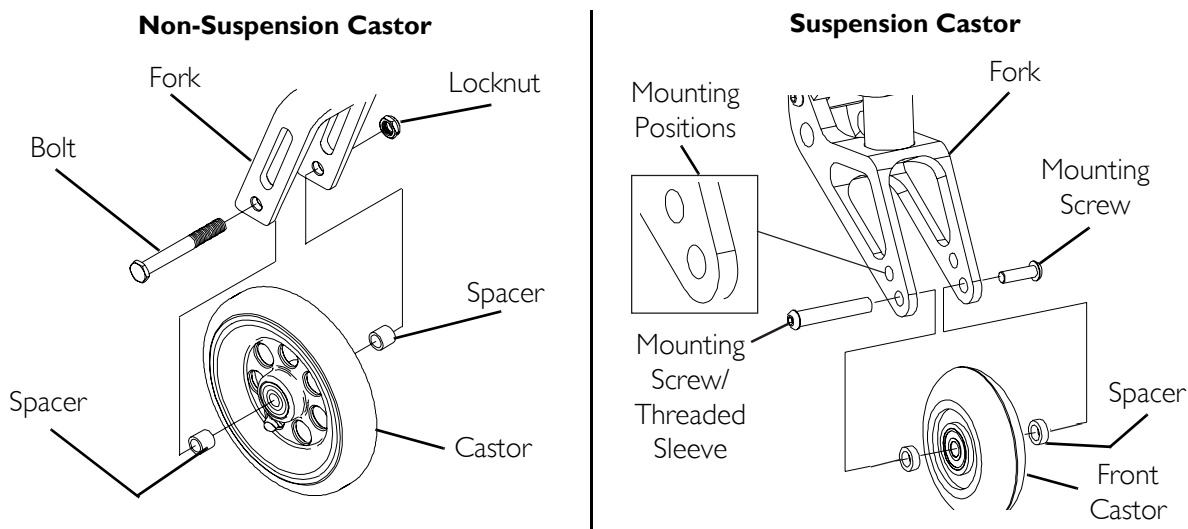


FIGURE 5.18 Replacing/Adjusting Castors

## Adjusting Front Castor Height

### CAUTION

Changing the height of the front/castors can affect the performance of the wheelchair. Contact Invacare at the telephone numbers on the back of this manual before performing this procedure.

NOTE: For this procedure, refer to FIGURE 5.19.

NOTE: When changing a rear wheel/front castor to a different size/type and or changing the original degree of camber of the wheelchair, it becomes necessary to adjust the front castor height so the wheelchair frame will remain parallel to the floor.

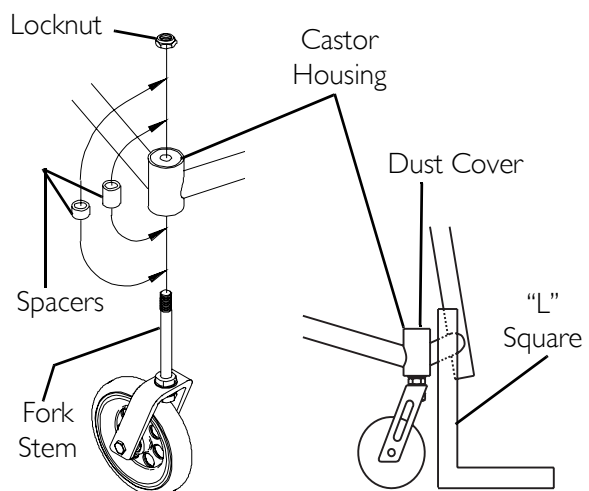


FIGURE 5.19 Adjusting Front Castor Height

1. Place the wheelchair on a flat surface.
2. Remove the dust cover on the fork assembly.
3. Remove the locknut that secures the front castor fork to the wheelchair frame.
4. Position a large right triangle or "L" square on the flat surface and against the castor housing that is welded to the wheelchair frame.
5. Adjust the height of the front castors by either adding or removing spacers from the fork stem until the wheelchair frame is parallel with the floor.
6. Reinstall locknut and dust cover onto the wheelchair.
7. Repeat this procedure for the opposite front castor.

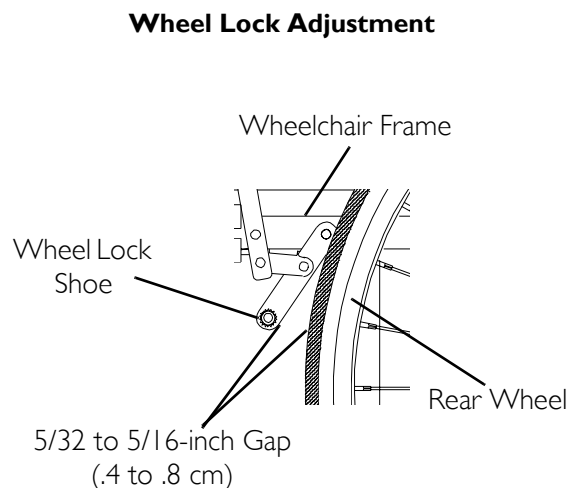
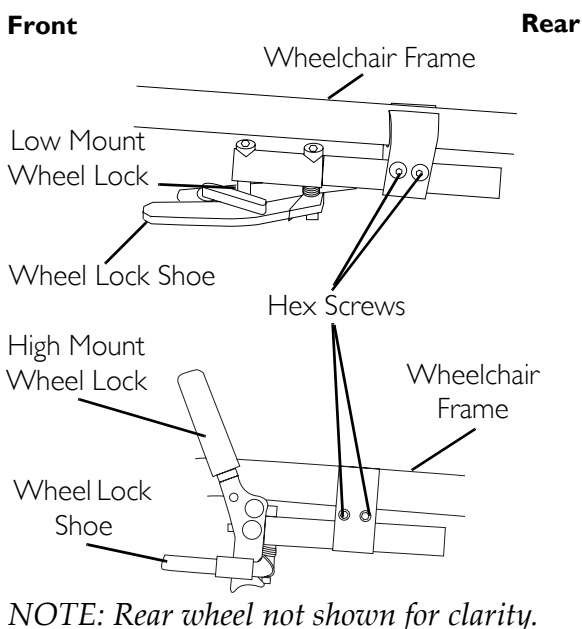
## Wheel Lock Adjustment/Replacement

*NOTE: For this procedure, refer to FIGURE 5.20.*

*NOTE: Invacare recommends low mount wheels locks when engaging in any contact sport.*

*NOTE: Before adjusting or replacing the High/Low mount wheel locks, ensure that the tyres are inflated to the recommended psi on the sidewall of the tyre.*

1. Loosen the locknuts and hex/allen screws that secure the High/Low mount wheel locks to side frame.
2. Perform one of the following:
  - Replacing the High/Low Mount Wheel Lock:
    - i. Remove the locknuts and hex/allen screws and remove existing wheel lock from the wheelchair.
    - ii. Install the new wheel lock and adjust.
  - Adjusting the High/Low Mount Wheel Lock:
    - i. Measure the distance between the wheel lock shoe and the rear wheel.
    - ii. Slide the wheel lock along the wheelchair until the measurement is between 5/32 and 5/16-inches (.4 and .8 cm).
    - iii. Tighten the wheel lock to the wheelchair frame.
    - iv. Repeat this procedure for the opposite wheel lock.
    - v. Engage the wheel locks and push against the wheelchair to determine if the wheel locks engage the rear wheels enough to hold the occupied wheelchair.
    - vi. Repeat STEPS i-v until the wheel locks engage the rear wheels enough to hold the occupied wheelchair.



*NOTE: High mount wheel lock shown for clarity*

**FIGURE 5.20** Wheel Lock Adjustment/Replacement



## SECTION 6—SEAT

### **⚠ WARNING**

**After ANY adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.**

## Replacing Adjustable Tension Seat Upholstery

### **⚠ WARNING**

**The seat upholstery and/or cushion MUST be cleaned regularly and/or replaced if incontinence is frequent. The risk of pressure sores is significantly higher with seat upholstery that is wet and/or soiled.**

*NOTE: For this procedure, refer to FIGURE 6.1 on page 58.*

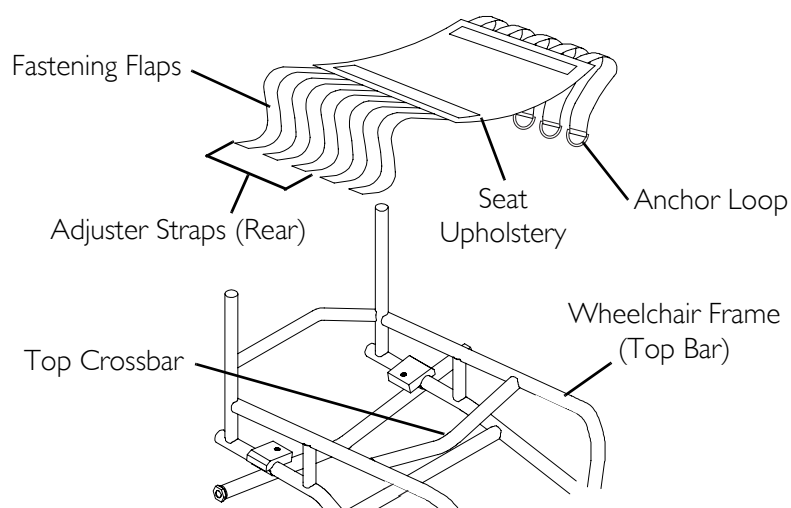
1. Remove the seat cushion and back upholstery from the wheelchair.
2. Place the wheelchair onto its two rear wheels and back posts.
3. Unlatch the five adjusting straps that secure the seat upholstery to the wheelchair frame.
4. Remove the existing seat upholstery.
5. Place the wheelchair back onto all four wheels.

*NOTE: Right and left is determined by sitting in the wheelchair.*

*NOTE: The seat upholstery MUST be positioned with the three rear adjusting straps towards the rear of the top crossbar for proper installation.*

*NOTE: Make sure the rear retaining flap is between the wheelchair frame and the back post support brackets (adjustable backs only).*

6. Position new seat upholstery onto the wheelchair frame, ensuring the five adjusting straps hang over the right and left sides of the wheelchair.
7. Pull the front adjuster straps around and under the wheelchair frame top bars.
8. Slip front adjuster strap through corresponding anchor loop and adjust the seat upholstery to desired tension. Secure the adjustment straps.
9. Place the wheelchair onto its two rear wheels and back post.
10. Securely latch the four remaining adjuster straps together.
11. Return wheelchair to upright position.
12. Reinstall the seat cushion and back upholstery.

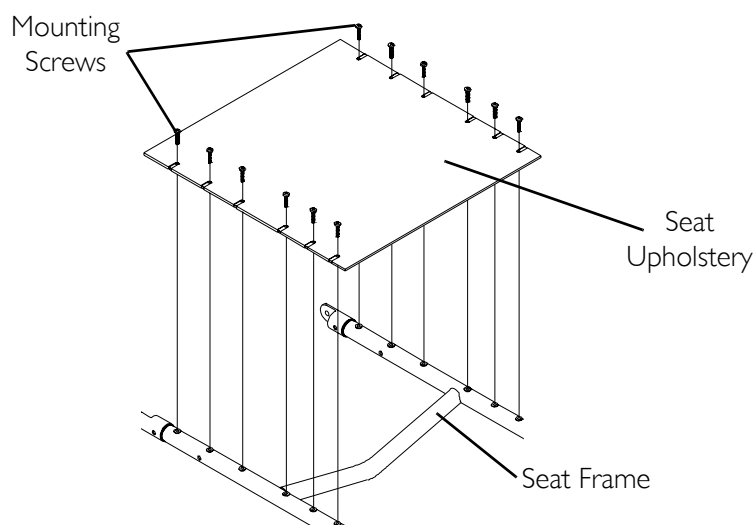


**FIGURE 6.1** Replacing Adjustable Tension Seat Upholstery

## Replacing Screw-On Seat Upholstery

*NOTE: For this procedure, refer to FIGURE 6.2 on page 58.*

1. Remove the seat cushion from the wheelchair.
2. Remove the twelve mounting screws that secure the existing seat upholstery to the seat frame.
3. Remove the existing seat upholstery.



**FIGURE 6.2** Replacing Screw-On Seat Upholstery

## Adjusting Transformer Seat Height

*NOTE: For this procedure, refer to FIGURE 6.3 on page 60*

### Adjusting Front Seat Height

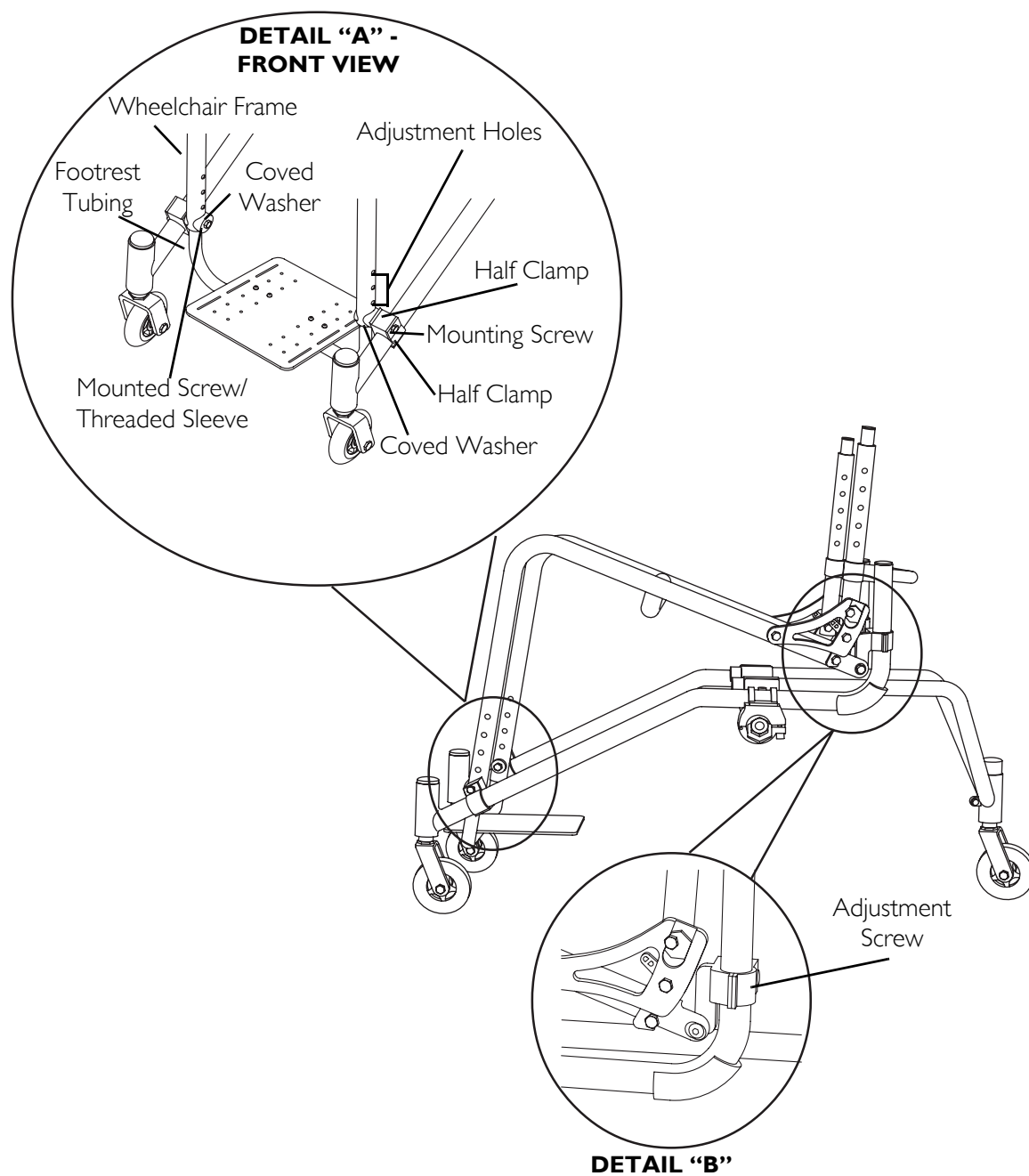
1. Note the order of the mounting screw, coved washers, spacer, half clamps and mounting screw/threaded sleeve and their position on the wheelchair frame and footrest tubing (Detail "A", FIGURE 6.3).
2. Remove the mounting screw, coved washers, spacer, half clamps and mounting screw/threaded sleeve on both sides of the wheelchair.

*NOTE: The footrest tubing will slide once the hardware is removed.*

3. Raise/lower the front of the seat to the desired position.
4. Adjust the footrest height if desired. Refer to Adjusting the X-terminator and Transformer Footrests on page 64.
5. Align the footrest tubing adjustment holes with the desired wheelchair frame adjustment holes.
6. Install the hardware removed in STEP 2 through the adjustment holes aligned in STEP 5.
7. Securely tighten all hardware.

### Adjusting Rear Seat Height

1. Loosen the two mounting screws on both sides of the front of the wheelchair (Detail "A").
2. Loosen the four adjustment screws on both sides of the rear of the wheelchair (Detail "B").
3. Adjust seat higher or lower to desired position. Use a tape measure or ruler to ensure that both sides are the same height.
4. Securely tighten the four adjustment screws at the rear of the wheelchair and the two mounting screws at the front of the wheelchair.



**FIGURE 6.3** Adjusting Transformer Seat Height

# SECTION 7—FOOTREST/ANTI-TIPPER

## ⚠ WARNING

After **ANY** adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

**ALWAYS** perform this procedure in the presence of an assistant. The position of the footrest, camber tube, back angle, the tautness of the back upholstery as well as the user's condition are directly related to the wheelchairs stability. Any change to one or any combination of the five may cause the wheelchair to decrease in stability. Use extreme caution when using a new seating position. The addition of anti-tippers may be required.

Check all allen screws that secure the footrest/raised footrest system to the wheelchair frame to make sure they are securely tightened before using the wheelchair. Especially if engaging in any contact sport.

The footrest assembly **MUST** be at least 1-3/4-inches (4.45 cm) above the ground/floor to avoid hitting protruding objects when using this wheelchair.

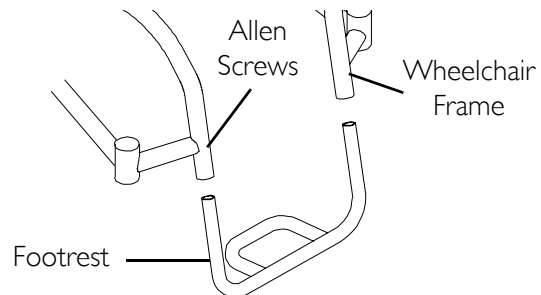
## Adjusting/Replacing Standard Footrest

*NOTE: For this procedure, refer to FIGURE 7.1.*

1. Loosen the two allen screws that secure the footrest to the wheelchair frame.

### Replacing the Footrest

1. Remove existing footrest.
2. Install new footrest.



**FIGURE 7.1** Adjusting/Replacing Standard Footrest

## ⚠ WARNING

The standard footrest has an open hoop. A footplate cover is recommended for wheelchair users that have leg spasticity or whose feet have a possibility of falling through the footrest hoop. A calf strap is provided with each wheelchair to prevent the feet from slipping backwards off of the footrest. Be sure the calf strap is secure when using the wheelchair.

## Adjusting the Footrest

1. Position new/existing footrest to desired height.
2. Tighten the two allen screws that secure the footrest to the wheelchair frame.

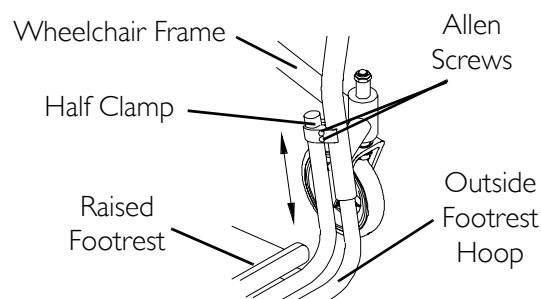
## Installing/Adjusting Optional Clamp on Raised Footrest

*NOTE: For this procedure, refer to FIGURE 7.2.*

*NOTE: This procedure is for Terminator Everyday (ED) wheelchairs ONLY.*

### Installing

1. Install the two half clamps onto either side of the wheelchair frame approximately 2-inches (5.08 cm) above existing footrest with two provided allen screws.
2. Repeat for the opposite side of the wheelchair.
3. Slide the clamp on raised footrest into the half clamps to the desired height.
4. Securely tighten the four allen screws.



**FIGURE 7.2** Installing/Adjusting Optional Clamp on Raised Footrest

### Adjusting

1. Loosen the four allen screws.
2. Adjust clamp on raised footrest to the desired height.
3. Securely tighten the four allen screws.

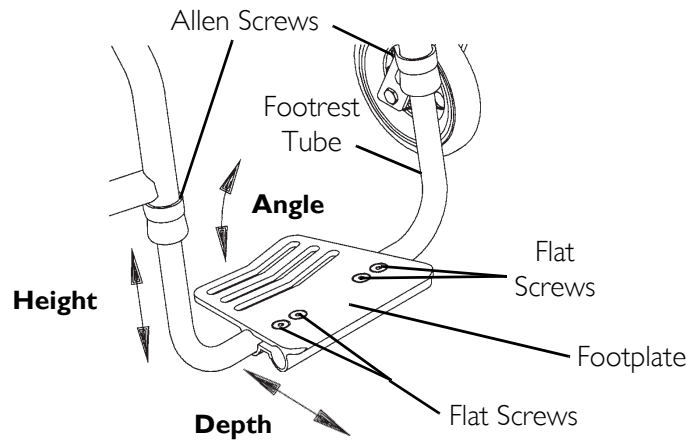
## Replacing/Adjusting Optional A4 Footrest

*NOTE: For this procedure, refer to FIGURE 7.3 on page 63.*

*NOTE: This procedure is for Terminator Everyday (ED) wheelchairs Only.*

### Replacing the Footrest

1. Loosen, but DO NOT remove the two allen screws that secure the footrest to the wheelchair frame.
2. Slide the existing footrest tubes out of the wheelchair frame and install new footrest by reversing this step.
3. Position the new footrest to a determined height.
4. Tighten the two allen screws that secure the footrest to the wheelchair frame.
5. Adjust the footplate to the desired position. Refer to [Adjusting Footplate Angle](#) on page 63 and/or [Adjusting Footplate Depth](#) on page 63.



**FIGURE 7.3** Replacing/Adjusting Optional A4 Footrest

### Adjusting Footplate Angle

1. Loosen, but DO NOT remove the four flat screws and locknuts that secure the footplate to the two footrest tubes.
2. Position the footplate to the necessary angle to accommodate the user.
3. Retighten the four flat screws and locknuts.

*NOTE: The locknuts should lie in the channel of the footplate half clamp.*

### Adjusting Footplate Depth

1. Loosen, but DO NOT remove the four flat screws and locknuts that secure footplate to the footrest tubes.

*NOTE: Observe the angle of footplate for reinstallation.*

2. Move the footplate to one of two positions to accommodate the user.
3. Retighten the four flat screws and locknuts.

*NOTE: The settings for positioning the footplates on the half-clamps may vary for each end user.*

*NOTE: The locknuts should lie in the channel of the footplate half clamp.*

## Installing the X-Terminator Footrest

*NOTE: For this procedure, refer to FIGURE 7.4 on page 64.*

1. Install the two half clamps onto either side of the wheelchair frame approximately 2 inches (5.08 cm) above the existing footrest with two provided allen screws.
2. Repeat for the opposite side of the wheelchair.
3. Slide the clamp on raised footrest into the half clamps to the desired height.
4. Securely tighten the four allen screws.

## Adjusting the X-terminator and Transformer Footrests

*NOTE: For this procedure, refer to FIGURE 7.4 and FIGURE 7.5 on page 65.*

### Depth

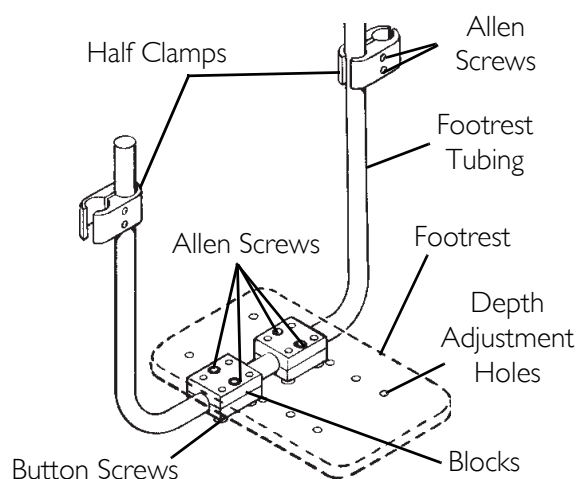
1. Remove the four allen screws from the footrest and blocks.
2. Move footrest rearward or forward to desired depth.
3. Align the holes in the footrest with the holes in the blocks on footrest tubing.
4. Install allen screws into footrest and into the blocks.
5. Securely tighten the four allen screws.

### Angle

1. Loosen the button screws on the blocks on bottom of the footrest tubing.
2. Adjust the angle of the footrest.
3. Retighten the button screws securely.

### X-Terminator Height

1. Loosen the four allen screws.
2. Adjust clamp on raised footrest to the desired height.
3. Securely tighten the four allen screws.



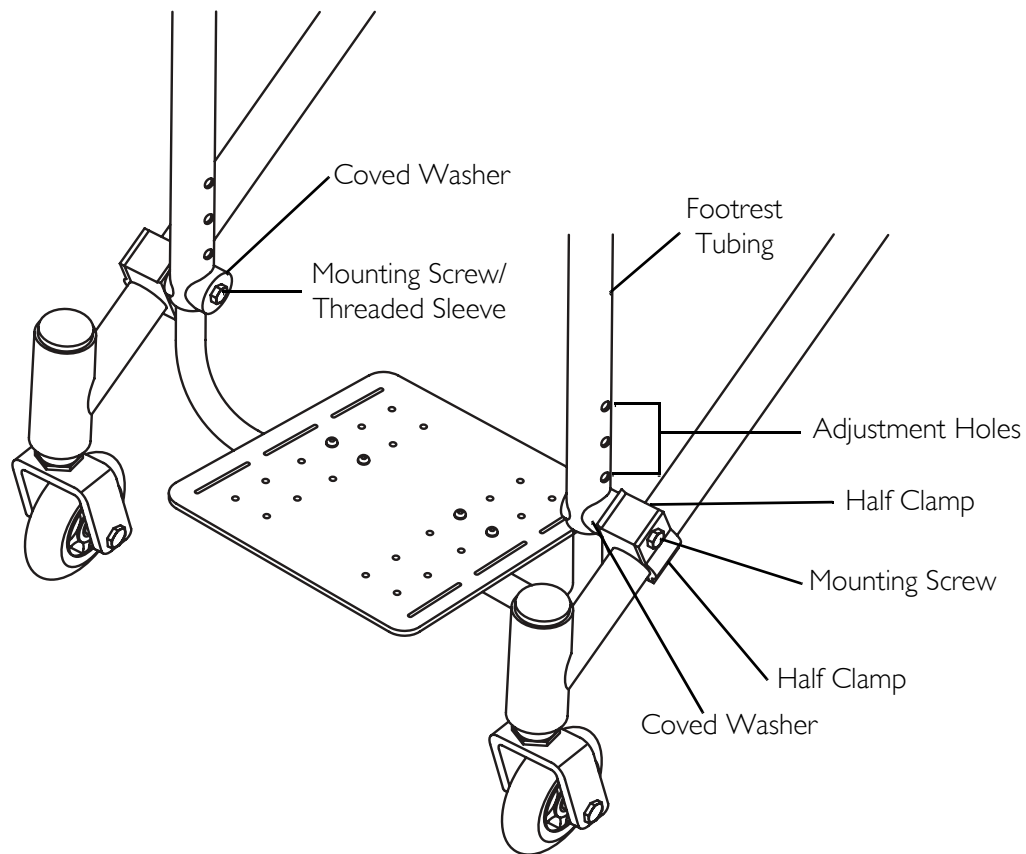
**FIGURE 7.4** Installing the X-Terminator Footrest - Adjusting the X-terminator and Transformer Footrests

### Transformer Height

*NOTE: For this procedure, refer to FIGURE 7.5.*

1. Note the order of the mounting screw, coved washers, spacer, half clamps and mounting screw/threaded sleeve and their position on the wheelchair frame and footrest tubing.
2. Remove the mounting screw, coved washers, spacer, half clamps and mounting screw/threaded sleeve on both sides of the wheelchair.
3. Choose an adjustment hole on the footrest tubing that will raise or lower the footrest to the desired position.
4. Reinstall the mounting screw, coved washers, spacer, half clamps and mounting screw/threaded sleeve on both sides of the wheelchair.
5. Securely tighten.





**FIGURE 7.5** Adjusting the X-terminator and Transformer Footrests - Transformer Height

## Adjusting/Replacing Anti-Tipper

### **⚠ WARNING**

**Anti-tippers MUST be attached at all times. Inasmuch as the anti-tippers are an option on this wheelchair (you may order it with or without the anti-tippers), Invacare strongly recommends ordering the anti-tippers as an additional safeguard for the wheelchair user.**

**Anti-tippers MUST be fully engaged. Ensure the release button of the anti-tipper fully protrudes out of the hole in the anti-tipper socket.**

**Ensure both anti-tippers are adjusted to the same height.**

*NOTE: For this procedure, refer to FIGURE 7.6 on page 67.*

*NOTE: To ensure the correct model anti-tipper is used refer to FIGURE 7.6. Measurements for anti-tippers are approximate and are taken using the top adjustment hole on the anti-tipper (Detail "A").*

## Adjusting Anti-tipper

### **⚠ WARNING**

When anti-tippers are used, anti-tippers **MUST** be adjusted to maintain a 1-1/2 to 2-inch (3.81 to 5.08 cm) clearance between the bottom of the anti-tipper wheels and the ground/ floor. This spacing should always be checked whenever adjustments/changes are made to the wheelchair. Failure to maintain proper spacing may result in the chair tipping over backward causing serious injury or property damage.

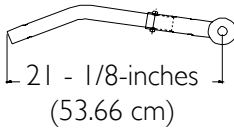
1. Press in the release button that secures the anti-tipper wheels to the anti-tipper bar.
2. Adjust the height of the anti-tipper wheels to between 1-1/2 and 2-inches (3.81 to 5.08 cm) of the ground/floor.
3. Repeat STEPS 1-2 for the opposite anti-tipper.

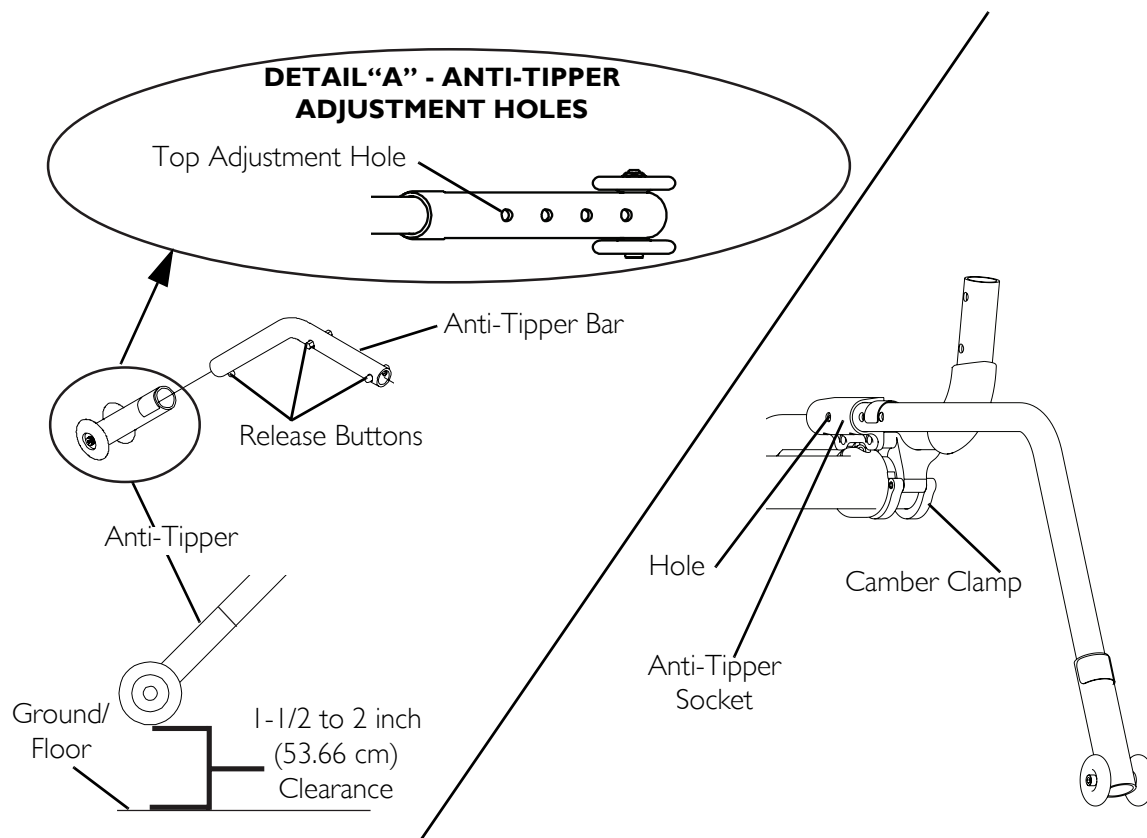
## Replacing Anti-tipper

### **⚠ WARNING**

When anti-tippers are used, anti-tippers **MUST** be adjusted to maintain a 1-1/2 to 2-inch (3.81 to 5.08 cm) clearance between the bottom of the anti-tipper wheels and the ground/floor. This spacing should always be checked whenever adjustments/changes are made to the wheelchair. Failure to maintain proper spacing may result in the chair tipping over backward causing serious injury or property damage.

1. Press in the release button that secures the existing anti-tipper to the anti-tipper socket and remove the anti-tipper from the anti-tipper socket.
2. Insert the new anti-tipper into the anti-tipper socket until release button engages.
3. Press in the release button on the anti-tipper bar and install the anti-tipper wheels onto the new anti-tipper bar.
4. Repeat STEPS 1-3 for the opposite anti-tipper.
5. Measure the distance between the bottom of the anti-tipper wheels and the ground floor.
6. If necessary, adjust the height of the anti-tippers. Refer to [Adjusting Anti-tipper](#) on page 66.

PART NUMBER	MEASUREMENT
1112178	 <p>21 - 1/8-inches (53.66 cm)</p>



**FIGURE 7.6** Adjusting/Replacing Anti-Tipper

## Installing/Removing/Adjusting Swivel Anti-Tip

*NOTE: For this procedure, refer to FIGURE 7.7 on page 68.*

*NOTE: This applies to any Terminator ordered with swivel anti-tip.*

### Installing/Depth Adjustment

1. Loosen set screws on anti-tip receivers (FIGURE 7.7).
2. Slide the swivel anti-tip into the anti-tip receivers. Position swivel anti-tip so it is even with wheels on chair or extends beyond them. Tighten set screws.

### Removing

1. Loosen set screws on anti-tip receivers (FIGURE 7.7).
2. Slide the swivel anti-tip out of the receivers.

## Adjusting Height

*NOTE: For this procedure, refer to FIGURE 7.7.*

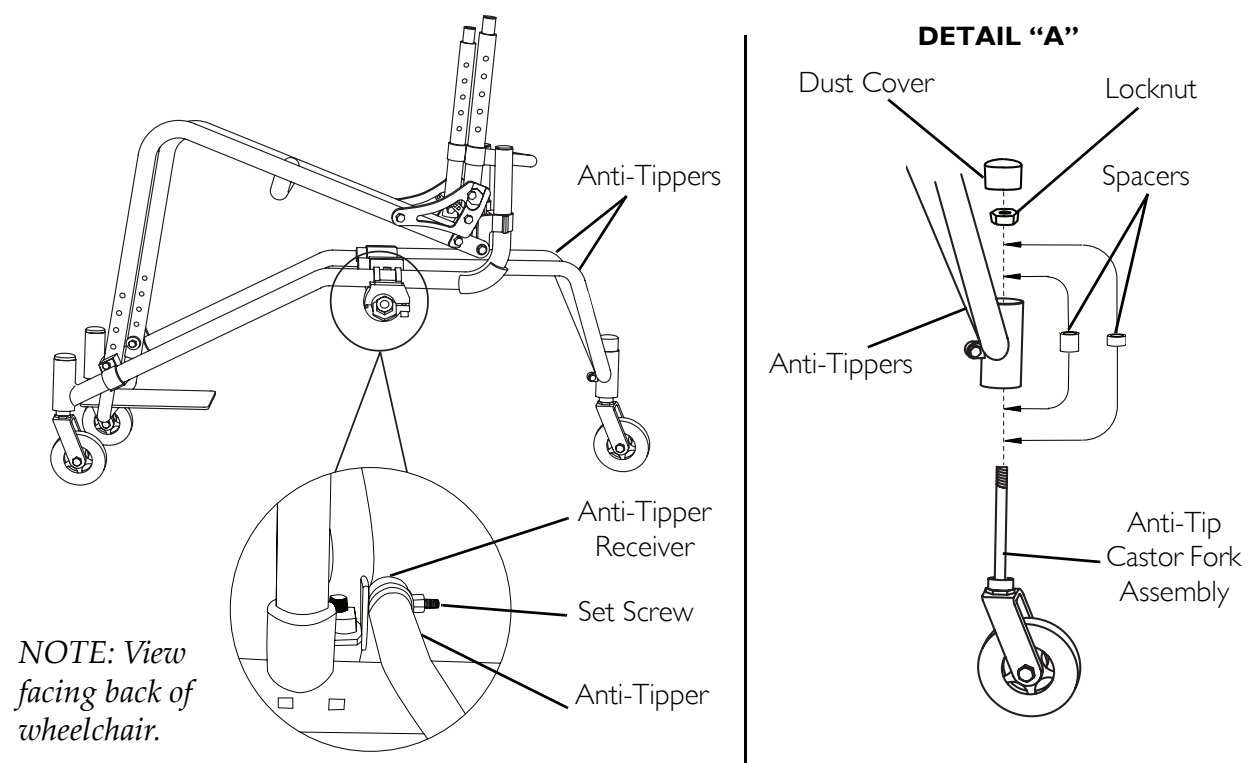
### All Wheelchairs with Swivel Anti-tip Except Paul Schulte Signature BB and T-5 Tennis Elite Models

1. To adjust the height of the swivel anti-tip, remove dust cover and loosen set screw on swivel anti-tip castor assembly (FIGURE 7.7).
2. Set anti-tip castor wheel to desired height. Tighten set screw and reinstall dust cover.

### Paul Schulte Signature BB and T-5 Tennis Elite Models ONLY

*NOTE: For this procedure, refer to FIGURE 7.7, Detail A.*

1. Remove the dust cover on the anti-tip castor fork assembly.
2. Remove the locknut that secures the anti-tip castor fork assembly to the anti-tipper.
3. Adjust the height of the anti-tip castor fork assembly to the desired height by either adding or removing spacers from the fork stem.
4. Reinstall locknut and dust cover onto the wheelchair.



**FIGURE 7.7** Installing/Removing/Adjusting Swivel Anti-Tip

---

## SECTION 8—SUSPENSION

---

### **⚠ WARNING**

**After ANY adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.**

---

*NOTE: The following procedures are for wheelchairs with the suspension option ONLY.*

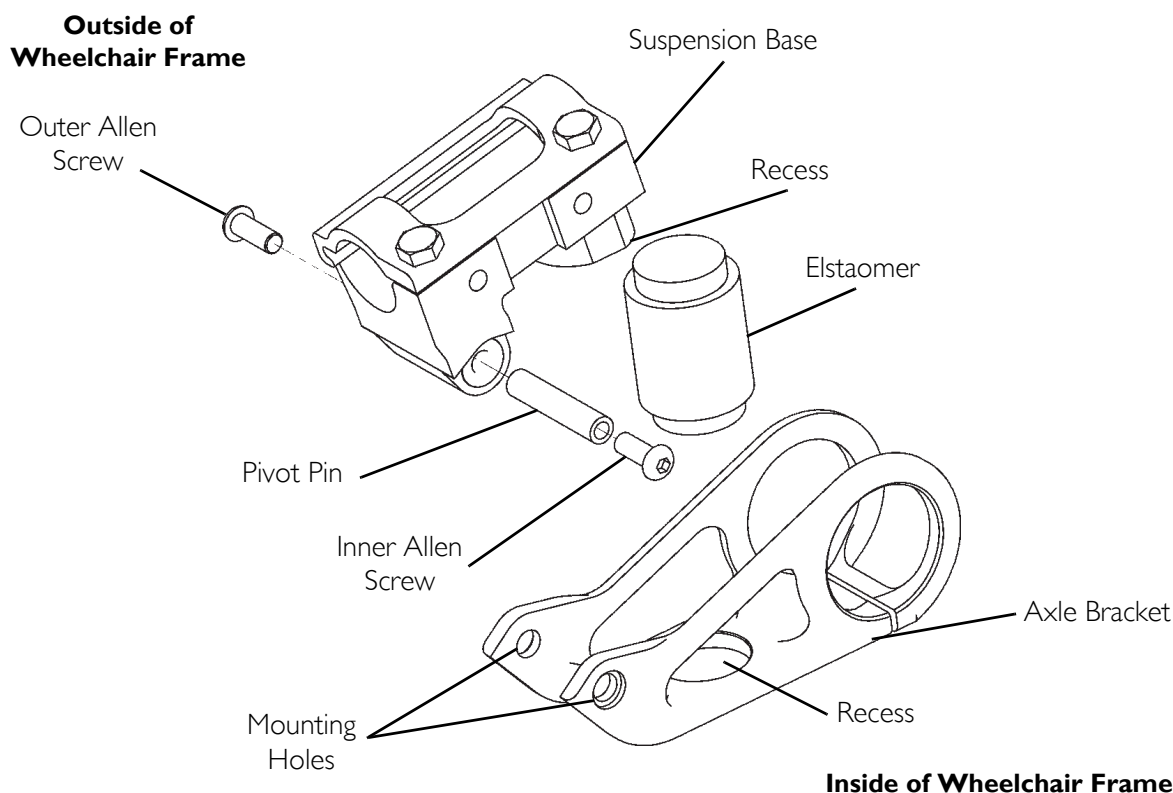
## **Elastomers and Suspension**

*NOTE: The performance of the wheelchair will be affected if elastomers are not the same on both sides of the wheelchair.*

## **Replacing Rear Elastomers**

*NOTE: For this procedure, refer to FIGURE 8.1 on page 70.*

1. Use an allen wrench to hold the outer allen screw.
2. While holding the outer allen screw in position, remove the inner allen screw from the pivot pin.
3. Use the allen wrench to push the pivot pin with outer allen screw out of the mounting hole.
4. Remove the existing elastomer.
5. Position the new elastomer between the recess in the axle bracket and the recess in the suspension base.
6. Compress and hold the elastomer between the axle bracket and the suspension base.
7. Insert the pivot pin into the mounting hole.
8. Install the outer allen screw into the pivot pin.
9. Use an allen wrench to hold the outer allen screw in position.
10. While holding the outer allen screw, install the inner allen screw into the pivot pin. Tighten securely.



**FIGURE 8.1** Replacing Rear Elastomers

## Replacing Front Elastomers

---

### CAUTION

**DO NOT** use excessive force when removing/installing the threaded sleeve from/onto the fork. Damage to the threaded sleeve may occur.

---

*NOTE: For this procedure, refer to FIGURE 8.2 on page 71.*

1. Using two allen wrenches, turn in opposite directions and remove one mounting screw from fork.

*NOTE: One mounting screw will not turn.*

2. Remove the threaded sleeve and mounting screw assembly from the fork. DO NOT use excessive force.
3. Remove the existing elastomer from the fork.
4. Install new elastomer determined in STEP 1 into fork.

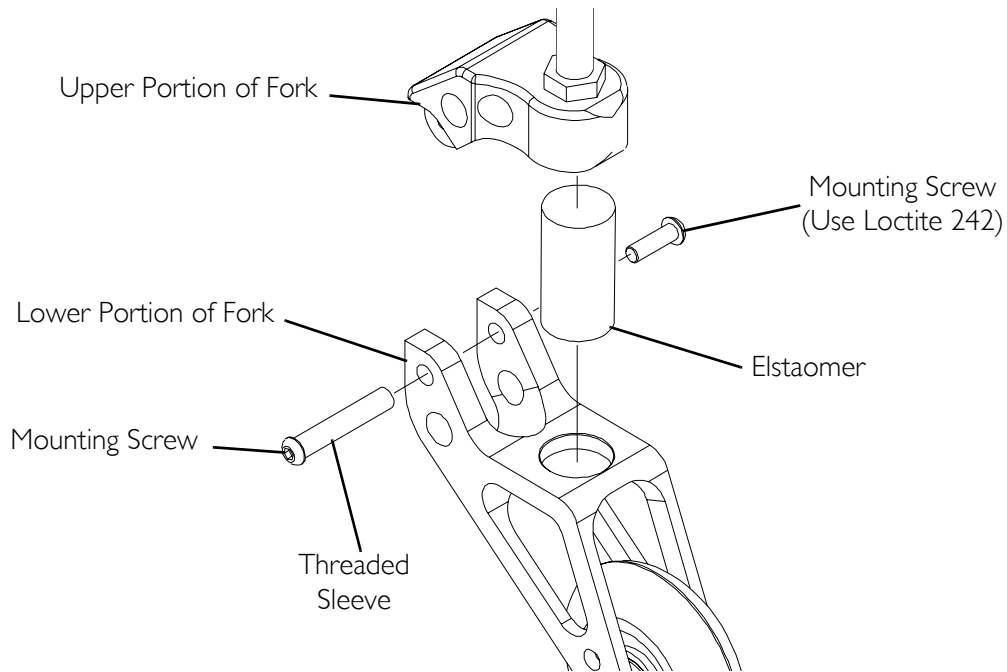
*NOTE: Make sure the elastomer sits in the two recessed areas on the fork.*

5. Align the mounting holes in the upper and lower portion of the fork.
6. Reinstall threaded sleeve and mounting screw assembly. DO NOT use excessive force.

**⚠ WARNING**

**Use Loctite 242™ when reinstalling the mounting screw into the threaded sleeve, otherwise the fork can become disassembled. Possible injury or damage could occur.**

7. Apply Loctite 242 to the mounting screw.
8. Reinstall the mounting screw into the threaded sleeve and tighten securely.



**FIGURE 8.2** Replacing Front Elastomers

## SECTION 9—WING/BUMPER

### ⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

The bumper design creates a potential foot entrapment area. Ensure the occupant's legs and feet are properly secured during use. When transferring the occupant, ensure the feet do not slip between the bumper and the footrests.

*NOTE: The following procedures are for Transformer wheelchairs ONLY.*

## Installing/Removing the Wing/Bumper

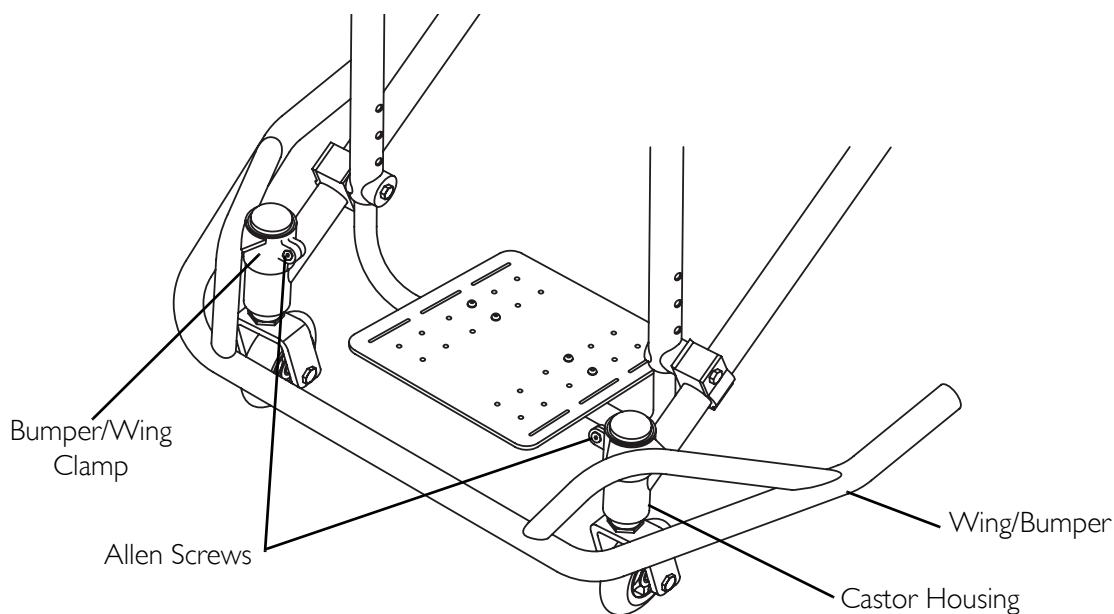
*NOTE: For this procedure, refer to FIGURE 9.1.*

### Installing

1. Slide wing/bumper clamps onto castor housing on the Transformer. Ensure the wing or bumper is even on both sides.
2. Tighten allen screws securely on each side.

### Removing

1. Loosen allen screws on wing/bumper clamps.
2. Slide up and remove.



**FIGURE 9.1** Installing/Removing the Wing/Bumper



# NOTES

# NOTES

# LIMITED WARRANTY

**PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.**

This warranty is extended only to the original purchaser/user of our products.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Invacare warrants the frame to be free from defects in materials and workmanship for the original purchaser for the following periods of time from the date of purchase:

Terminator Everyday (ED) and Terminator Titanium Everyday (ED) are lifetime

All other Terminator and X-Terminator models are 3 years

All component parts including, but not limited to camber tubes, caster forks, armrests and upholstery are warranted against defects in materials and workmanship for a period of one year from the date of purchase except push handle grips, bushings, bearings, and tyres/tubes. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare Top End at the address on the back page. Provide dealer's name, address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

**LIMITATIONS AND EXCLUSIONS: THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED, PRODUCTS SUBJECTED TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE, COMMERCIAL OR INSTITUTIONAL USE, PRODUCTS MODIFIED WITHOUT INVACARE'S EXPRESS WRITTEN CONSENT, INCLUDING, BUT NOT LIMITED TO, MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS; PRODUCTS DAMAGED BY REASON OF REPAIRS MADE TO ANY COMPONENT WITHOUT THE SPECIFIC CONSENT OF INVACARE, OR TO A PRODUCT DAMAGED BY CIRCUMSTANCES BEYOND INVACARE'S CONTROL, AND SUCH EVALUATION WILL BE SOLELY DETERMINED BY INVACARE. THE WARRANTY SHALL NOT APPLY TO PROBLEMS ARISING FROM NORMAL WEAR OR FAILURE TO ADHERE TO THESE INSTRUCTIONS.**

**THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND THE SOLE REMEDY FOR VIOLATIONS OF ANY WARRANTY WHATSOEVER, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT PURSUANT TO THE TERMS CONTAINED HEREIN. THE APPLICATION OF ANY IMPLIED WARRANTY WHATSOEVER SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTY PROVIDED HEREIN. THE MANUFACTURER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES WHATSOEVER.**

**THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS..**



**Yes, you can.™**



---

**Invacare Corporation**

[www.invacare.eu.com](http://www.invacare.eu.com)

**Switzerland**

Invacare International  
Route de Cite-Ouest 2  
CH-1196 Gland, Switzerland  
+44 22 354 6024

Invacare, USA  
One Invacare Way  
Elyria, Ohio USA  
44036-2125  
800-333-6900

Invacare Limited  
South Road  
Bridgend Industrial Estate  
Bridgend  
CF31 3PY  
Tel: 01656 647327  
Fax: 01656 649016  
email: [uk@invacare.com](mailto:uk@invacare.com)  
[www.invacare.co.uk](http://www.invacare.co.uk)

All rights reserved. Trademarks are identified by the symbols ™ and ®. All trademarks are owned by or licensed to Invacare Corporation unless otherwise noted.

Dual Grip is a registered trademark of Sun Metal Products, Inc.

KIK is a registered trademark of KIK Technology, Inc.

Natural Fit is a registered trademark of Three Rivers.

Spinerdy is a registered trademark of Spinerdy, Inc.

3-in-1 oil is a registered trademark of American Home Products Corporation.

WD-40 is a registered trademark of WD-40 Company.

Loctite 242 is a trademark of the Loctite Corporation.

Teflon is a registered trademark of E.I. Du Pont De Nemours and Company.

© 2007 Invacare Corporation.

Part No 1122172

Rev D - 09/07